The ADVERTISERS' INDEX

A

Aerial Exploration Co. .....
Ajax Iron Works .....
Alco Products, Inc. 82-83
Allegheny Steel Co. .....
Allis-Chalmers Mfg. Co. .....
Allis. Louis Co., The 120
Allsteel Products Mfg. Co., Inc., The.
Amerada Petroleum Corp. 103
American Askania Corp. .....
American Cable Co., Inc. .....
American Cast Iron Pipe Co. .....
American Iron & Machine Works Co.
American Meter Co. .....
American Radiator Co. .....
American Rolling Mill Co., The ....
American Sheet & Tin Plate Co. ....
American Steam Pump Co. .....
American Steel & Wire Co. .....
American Tank & Equipment Corp...
American Well Works, The .....
Anchor Post Fence Co. .....
Apex Regulator Co. .....
Armstrong Machine Works .....
Athey Truss Wheel Co. .....
Automotive Distillate Corp. 49
Axelson Mfg. Co., Ltd. .....
Ayer & Lord Tie Co. .....

B

Badger, E. B., & Sons Co. .....
Baker Oil Tools, Inc. .....
Barber-Greene Co. 100
Baroid Sales Co. .....
Barnsdall Refineries, Inc. .....
Barrett Co., The 63
Barrett, William M., Inc. .....
Bethlehem Steel Co. 1
Bigelow-Liptak Corp. .....
Bignall & Keeler Machine Works.... 59
Black, Sivalls & Bryson, Inc. .....
Blair, C. E. .....
Bradford Motor Works, Inc. 116
Brauer Machine & Supply Co. .....
Braun, C. F., & Co. .....
Brewster Co., Inc., The 46
Bridgeport Machine Co. .....
Bristol Co., The .....
Broderick & Bascom Rope Co. .....
Brown Instrument Co. .....
Buckeye Traction Ditcher Co. .....
Burke-Greis Oil Co. 148
Butler Mfg. Co. .....
Byers, A. M., Co. .....
Byron Jackson Co. .....

C

Carey, Philip Co., The .....
Caterpillar Tractor Co. .....
Chain Belt Co. .....
Chaplin-Fulton Mfg. Co., The 109
Chapman Valve Mfg. Co., The.....
.....Inside Front Cover
Chicago Bridge & Iron Works .....
Clark Brothers .....
Classified Wants 142-143
Cleveland Trencher Co., The 35
Columbian Steel Tank .....
Columbus Forge & Iron Co., The....149
Continental Supply Co., The 65
Cooper-Bessemer Corp., The 41
Corona Products, Inc. .....
Crane Co. .....

D

Darling Valve & Mfg. Co. .....
Dart, E. M., Mfg. Co. .....
Davey Compressor Co. .....
Davis Regulator Co. .....
Dearborn Chemical Co. 103
Devine, J. P., Mfg. Co. 49
Diamond Rubber Co. .....
Dixon Crucible Co., Joseph 148
Dodge Brothers Corp. .....
Donovan Boiler Works, Inc. .....
Dresser, S. R., Mfg. Co. 21
Driftmeter, Inc. 125

E

Eagle-Picher Lead Co. 152
East Texas Refining Co. .....
Economy Electric Co. 149
Economy Pump & Tool Co., The....
Edward Valve & Mfg. Co., The .....
Egyptian Government Supply of Crude
Petroleum 147
Empire Oil & Refining Co. .....
Ethyl Gasoline Corp. .....
Exchange Banks of Tulsa .....

F

Falk Corp., The .....
Fenwick-Reddaway Mfg. Co. .....
Fisher Governor Co. .....
Foster Wheeler Corp. .....
Foxboro Co., Inc., The 155
Francis Bros. 167
Franklin Valveless Engine Co. .....
Frick-Reid Supply Corp. .....

G

Garlock Packing Co., The .....
Gaso Pump & Burner Mfg. Co. .....
.....Inside Back Cover
Gates Rubber Co. .....
General American Tank Car Corp....
General Electric Co. .....
Globe Oil Tools Co. .....
Goodrich, B. F., Rubber Co., The ...
Goodyear Tire & Rubber Co. .....
Gott, H. P., Mfg. Co., Inc. .....
Goulds Pumps, Inc. .....
Gray Processes Corp., The.....92-93
Griscom-Russell Co., The 135
Guiberson Corp., The .....
Gulf Refining Co. .....

H

Halliburton Oil Well Cementing Co.. 85
Hanlon-Buchanan, Inc. .....
Harrisburg Pipe & Pipe Bending Co..
Hazard Wire Rope Co. .....
Hedges-Walsh-Weidner Co., The ....
Heeter, Sons & Co., Inc., C. M. ....
Hercules Motors Corp. .....
Hercules Supply Co. .....
Hercules Tool Co. .....
Heydrick Mapping Co. .....
Highland Iron & Steel Co., The 6
Hope Engineering Co. 118
Hough, Charles N., Mfg. Co., The ...
Hughes Tool Co. .....Back Cover
Humble Oil & Refining Co. 137

I

Industrial Dallas, Inc. .....
International Derrick & Equipment
Co. .....
International Harvester Co. of Amer-
ica .....
International Nickel Co., Inc., The..
International-Stacey Corp. .....
International Supply Co. .....

J

Jackson Co., Byron .....
Jackson Engineering Corp. .....
Jarecki Mfg. Co. 115
Jenkins Bros. .....
Jerguson Gage & Valve Co. 136
Johns-Manville Corp. 37
Jones & Laughlin Steel Corp. .....

K

Kellogg, M. W., Co., The 66
Kennedy Valve Co., The 109
Kerotest Mfg. Co. .....
Key Boiler Equipment Co. .....
Kirk-Morrow Iron Works, Inc. .....

L

Landis Machine Co., Inc. .....
Layne & Bowler Co. .....
Leader Iron Works, Inc. .....
Leeds & Northrup Co. .....
Leonard Construction Co. .....
Lincoln Electric Co. .....
Linde Air Products Co. 3
Longyear, E. J., Co. .....
Ludlow Valve Mfg. Co. .....
Lufkin Foundry & Machine Co., The.129
Lummus Co., The 54-55
Lunkenheimer Co., The 8

Mc

McClintic-Marshall Corp. 1
McCord Radiator & Mfg. Co. 130
McIntosh & Seymour Corp. 134
McKee, Arthur G., & Co. .....

M

MacClatchie Mfg. Co. .....
Magnolia Petroleum Co. .....
Mair, D. S., Machinery Corp. .....
Maloney Tank Mfg. Co. .....
Marsh Gauge Pole Co. .....
Martin-Decker Corp. .....
Mathieson Alkali Works, Inc., The..
Merco Nordstrom Valve Co. .....
Metric Metal Works .....
Mid-Continent Map Co. 127
Mid-Continent Oil & Gas Assn. 95
Midwest Piping & Supply Co., Inc...
Mine Safety Appliance Co. .....
Moloney Electric Co. .....
Moon Mfg. Co., The .....
Moore, Lee C., & Co., Inc....Front Cover
Moorlane Co., Inc. .....
Moser Manufacturing Co. .....
Mount Pleasant Chamber of Com-
merce .....
Munn & Co. 136

N

National Equipment Corp. .....
National Lead Co. .....
National Supply Co. .....
National Tank Co. .....
National Transit Pump & Machine Co. 19
National Tube Co. 57
Naylor Pipe Co. 38
Neilan Co., Ltd. 60
North American Car Corp. .....
Northwest Engineering Co. 45

O

Oakite Products, Inc. .....
Oil and Gas Journal, The 123
Oil Conservation Engineering Co. ...
Oil Well Supply Co. 51
Oxweld Acetylene Co. 3

P

Page Fence Assn. .....
Page Steel & Wire Co. .....
Paraffine Companies, Inc., The .....
Parkersburg Rig & Reel Co., The ... 4
Patterson-Ballagh Corp. .....
Penberthy Injector Co. 23
Petroleum Engineering, Inc. .....
Petroleum Equipment Co. 148
Petroleum Iron Works Co. .....
Petroleum Rectifying Co. .....
Pickering Governor Co., The 116
Pittsburgh Equitable Meter Co. 144

P

Pittsburgh-Des Moines Steel Co. ...
Pittsburgh Steel Products Co. 7
Plymouth Cordage Co. .....
Pomona Pump Co. .....
Powell, William, Co. .....
Power Mfg. Co., The .....
Power Piping Co. .....
Prescott Co., The .....
Prest-O-Lite Co., Inc., The 3
Public Service Co. .....
Pure Oil Co., The .....

R

Reading Iron Co. .....
Reading-Pratt & Cady Co., Inc. ....
Regan Forge & Engineering Co. ....
Reid, Joseph, Gas Engine Co. .....
Republic Steel Corp. .....
Republic Supply Co. .....
Rinehart's, Ira, Oil Report 141
Robinson Orifice Fitting Co. .....
Roebling's, John A., Sons Co. .....
Ross-Meehan Foundries Co. .....

S

St. Louis Cordage Mills 126
Shaffer Tool Works .....
Sherwin-Williams Co. .....
Smooth-On Mfg. Co. .....
South Chester Tube Co. .....
Southwestern Construction Corp. ...
Spang, Chalfant & Co., Inc. .....
Sperry-Sun Well Surveying Co. .....
Stoody Co. .....
Sureshot Torpedo Co. .....

T

Tagliabue, C. J., Mfg. Co. .....
Taylor Forge & Pipe Works .....
Technical Products, Inc. .....
Texas Electric Service 72
Texas Steel Co. .....
Timken Michigan Co., The 111
Timken Roller Bearing Co., The.....
Titusville Iron Works Co. .....
Toledo Pipe Threading Machine Co..116
Trackson Co. .....
Tretolite Co. .....
Trimont Mfg. Co. .....
Truman Smith Const. Co., The .....
Truscon Steel Co. .....
Tube Turns, Inc. .....

U

Union Carbide & Carbon Corp. 3
Union Wire Rope Co. .....
United Engineers & Constructors....
United Gas System 107
United States Steel Corp. .....
Universal Oil Products Co. 74-75

V

Vacuum Oil Co., The .....
Vellumoid Co., The .....
Vogel, Felix A. .....
Vogt, Henry, Machine Co. .....

W

Wagner Electric Corp. 69
Wailes, Dove-Hermiston Corp. 33
Walworth Co. .....
Warren Petroleum Co. .....
Westco Pump Corp. 131
Westcott Valve Co. .....
Westinghouse Electric & Mfg. Co., The
Wickwire Spencer Steel Co. .....
Williamsport Wire Rope Co. .....
Winkler-Koch Engineering Co., The.
Worthington Pump & Machy. Corp.. 5

Y

Youngstown Sheet & Tube Co., The.. 2

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Table of Contents

SPECIAL ARTICLES

Initial Output in East Texas Declines ... 11
By Andrew M. Rowley
Oil Industry's Amazing Record in 1931 ... 13
Oil Field Electrification Discussed ... 14
Field Operations Suffered in 1931 ... 15
By James McIntyre
MacArthur Chose Just the Right Moment ... 16
By Thomas F. Smiley
Bowling Green Refining Co. Completes Topping Plant 17
By W. T. Ziegenhain
Supreme Court Rulings on Martial Law ... 18
A. P. I. Refinery Report ... 18
You Tell Them (Editorial) ... 20
Colloid Chemistry and Oil Refining ... 22
By Jacque Morrell and Gustav Egloff
President Beaty Confers on East Texas Outlets ... 24
Well in East Texas is Drilled in Lake ... 27
By L. G. E. Bignell
New Method of Lifting Fluid in Wells ... 28-29
By H. W. Fletcher
Oil Men Before Journal's Cameras ... 31
Pipe Line Construction News ... 32
Steam Rotary Drilling Equipment Test ... 50
By John T. Hayward
New Low Prices in Refinery Products in 1931 ... 52
By C. O. Willson
Average Prices of Refinery Products During Year ... 53
East Texas Depressed Whole Industry in 1931 ... 56
By James McIntyre
Year's Record of Greatest Oil Field ... 58
By L. E. Bredberg
Slack Year in Central West ... 61
By George A. Whitney
Hart County Led Kentucky in New Work ... 62
Outside Factors Held Back Oklahoma ... 64
By W. A. Spinney
Eight New Pools on Gulf Coast in 1931 ... 70
By Neil Williams
Mount Pleasant Extension Michigan's High Spot ... 73
By Paul A. Elliott
Oversupply and Low Prices Keep Down Drilling ... 76
By Leon H. Walter
Important Oil Discoveries in Kansas ... 77
By W. A. Spinney
Central and Western Texas' Quiet Year ... 80
By L. E. Bredberg
Temporary Lull in Southwest Texas ... 84
By B. D. Stevenson
No Large Development in Louisiana, Arkansas ... 86
By J. R. Crumpton
Mississippi Development ... 86
Trend of Average Retail Price Turns ... 88
By W. T. Ziegenhain
Service Station Prices in 50 Representative Cities ... 89
No New Pools in Rocky Mountain Area ... 90
By Tolbert R. Ingram
Canada's Output Kept Down in 1931 ... 94
By Victor Lauriston
Many Long Pipe Lines Laid in 1931 ... 96
Markets Opened to Rich Gas Fields ... 98
Gasoline Pipe Line Proves Success ... 99
Poor Year Experienced in California ... 101
By L. P. Stockman
Will Wildcat Many States in 1932 ... 102
New York Exports Sharply Lower ... 105
By A. E. Mockler
California Shipped Less Gasoline East ... 105
Atlantic Coast Prices Lower in 1931 ... 106
Crude Oil Price Changes in 1931 ... 108
Briefs Upholding Texas Martial Law ... 124
Field Problems and Their Solution ... 170
Edited by Thomas F. Smiley
Map of Producing Areas in East Texas 170-171-173-174-175

FIELD OPERATIONS

Late Fields ... 24
West Texas, North Texas and Panhandle ... 25
East Texas ... 26
By L. E. Bredberg
Oklahoma ... 34
Kansas ... 36
By W. A. Spinney
North Louisiana, Arkansas and Mississippi ... 39
By J. R. Crumpton
Southwest Texas ... 40
By B. D. Stevenson
Gulf Coast ... 42
By Neil Williams
Rocky Mountain Area ... 43
By Tolbert R. Ingram
Canada ... 43
By Victor Lauriston
California ... 44
By L. P. Stockman
Michigan ... 47
By George A. Whitney
Central West and Kentucky ... 48
By George A. Whitney
Eastern Fields ... 48
By Staff Correspondent

REFINING AND MARKETING

Reduce Prices on Oklahoma Lubricants ... 12
By C. O. Willson
Technical Questions Answered ... 128
By C. K. Francis, Ph. D.
East Coast Gasoline Market Recovers ... 140
By A. E. Mockler
Brief Items for Petroleum Refiners ... 153
Natural Gasoline Manufacture ... 154
Refinery and Crude Prices ... 156-157
Tank Wagon Quotations ... 158
Of Interest to Sales Departments ... 159

DEPARTMENTS OF GENERAL INTEREST

The Advertisers' Index ... 9
Classified Want Advertisements ... 142-143
Natural Gas Developments ... 145
Oil Securities Market ... 160-161
Personal Paragraphs About Oil Men ... 168
Oil Industry Equipment and Supplies ... 169
Crude Petroleum Statistics ... 176

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Refinery Section Starts on Page 140

Initial Output in East Texas Declines

Highest production in 1931, week ending Aug. 8, average daily output 2,551,807 bbls. Peak of U. S. production, week ending Aug. 24, 1929, average 2,975,435 bbls.

Rusk County Completions Show Drop of 33 Per Cent Since September. Decrease in Gregg County 20 Per Cent

By Andrew M. Rowley

Lowest daily average crude oil production in the United States during 1931 was for week ending Sept. 5 with average output of 1,736,007 bbls.

Oklahoma accounted for the bulk of the decline in crude oil production in the United States last week. While flooded conditions throughout East Texas handicapped operations greatly, it is interesting to note that although 89 wells were completed there last week, daily average production showed a decrease of 340 barrels. While last week may not be any criterion whatever of the trend, it might be significant that completions in Gregg County last week averaged 126 barrels per hour, while during the last week in September, completions in this same county averaged 157 barrels per hour. The drop in Rusk County was from 128 barrels per hour in September to 85 barrels per hour last week.

An encouraging sign at this time is the close watch being kept on all factors which might affect the general situation. This is shown in the efforts to provide adequate pipeline connections for wells in East Texas; in the taking over of connections in other sections where buyers were getting more crude oil than their requirements called for, with a resulting weakness in the market in that territory; and the attention being given by the industry as a whole to refinery operations and the accumulation of stocks of gasoline.

The lack of business judgment in piling up excess stocks of gasoline which depress prices certainly is shown in the record for 1931 when the industry sold its products at the lowest prices in years despite the fact consumption in the United States was two per cent greater than in 1930 and all demand, domestic and export, was only 2½ per cent less than during the previous year.

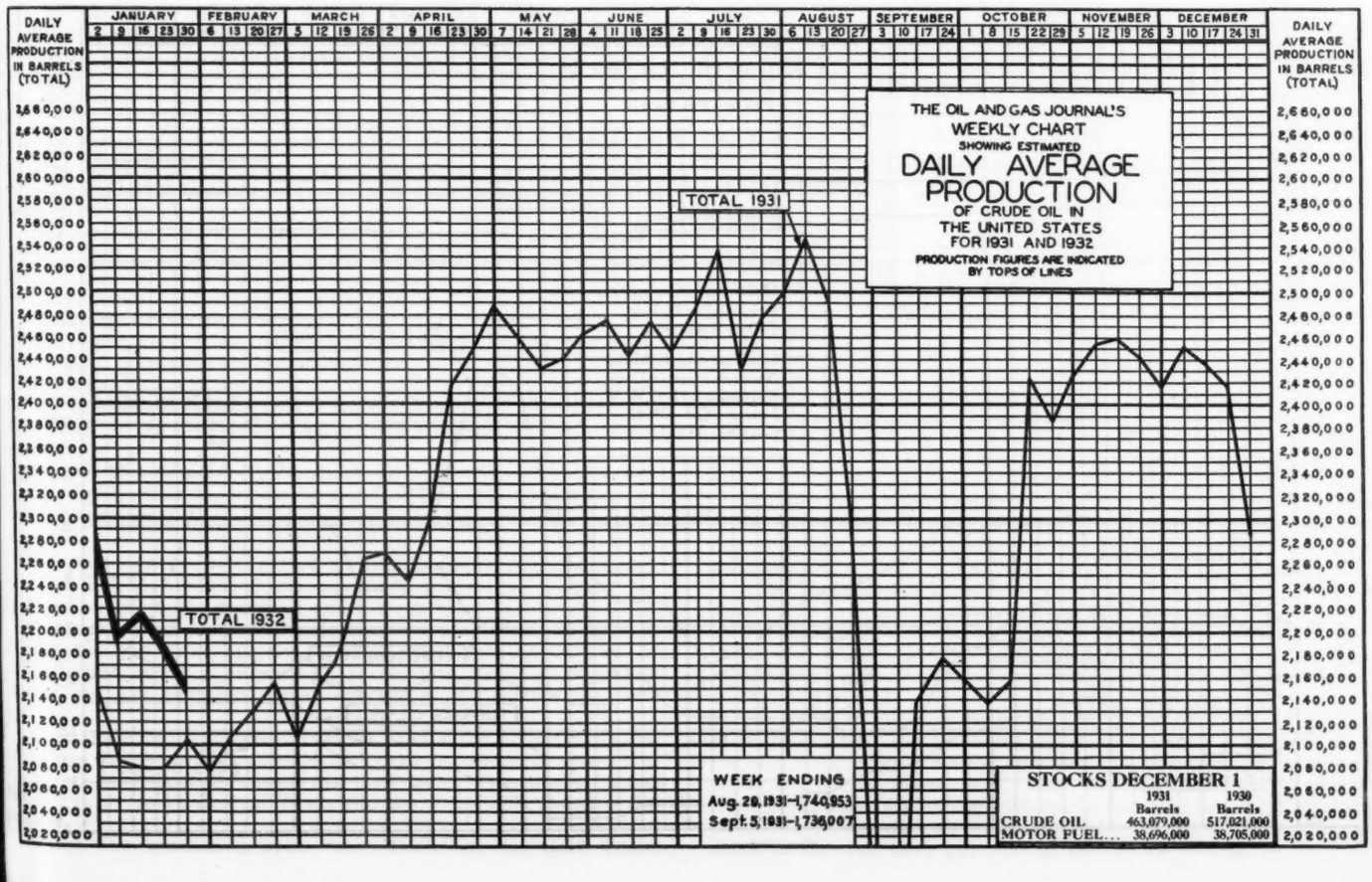
As has been stated before, this is the period of the year when the foundation is laid for the price structure during the main consuming season. The industry certainly should know what caused low prices in the past and should see that such conditions do not exist this year.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of crude oil in the United States for week ended January 23 and a comparison with the previous week follows:

	Jan. 23	Jan. 16
Oklahoma—		
Oklahoma City	95,685	103,990
Seminole-St. Louis	114,810	127,885
Remainder of State	200,440	209,220
Total Oklahoma	410,935	441,095
East Texas—		
Kilgore	114,326	112,086
Lathrop	106,760	112,368
Joiner	111,695	108,667
Total East Texas	332,781	333,121
West Texas	173,746	175,235
North Central Texas	75,285	75,028
Texas Panhandle	52,863	49,212
East Central Texas	49,775	51,152
Gulf Coast—Texas	105,904	105,662
Southwest Texas	58,110	59,036
Total State of Texas	848,464	848,446
North Louisiana	29,030	28,710
Gulf Coast—Louisiana	28,462	27,905
Arkansas	34,325	34,250
Kansas	97,620	98,945
Eastern	121,000	122,000
Rocky Mountain	81,044	81,782
California—		
Santa Fe Springs	66,500	66,500
Long Beach	77,500	78,500
Playa Del Rey	21,000	21,000
Elwood	16,500	16,500
Kettleman	60,000	62,250
Remainder of State	265,250	263,500
Total California	506,750	508,250
Total United States	2,157,630	2,191,383

→ Decrease 33,753 Bbls. Daily ←



Reduce Prices on Oklahoma Lubricants

Quotations Generally Lower on Bright Stocks and Neutral Oils. Remainder of Market Marks Time

By C. O. Willson

A revision downward in the list of lubricating products of Oklahoma refineries was the most important development of the week in the Oklahoma (Group 3) market. Led by a 1 to 1½-cent decline in all grades of bright stocks, the adjustment includes one-fourth to one-half cent reductions in neutral oils with scattered revisions in finished motor oils, the amounts varying with the different companies making the changes. With the new prices, the principal grade of Oklahoma bright stock—150-160 D, zero to 10 cold test—is selling at 16½ cents per gallon for domestic movement and the 200 3 color, zero to 10 cold test, neutral, the most actively traded of the neutral oils, is now quoted at 8½ cents.

All other products of the Oklahoma refinery list were marking time. The advance in refinery gasolines and natural gasolines was stopped and the market appeared reactionary the first of the week. There has been some increases in the crude runs to stills of the smaller plants both in Oklahoma and inland Texas and more gasoline has been offered on the spot market with less buying, explained as due to unfavorable weather conditions in the middle western states. Spot trading in natural gasolines was also dull. However, this market looked better on Tuesday when it became known that an exporting company had purchased 3,500,000 gallons of stabilized material for shipment to its Gulf Coast terminals. This will remove regular grade natural gasoline which otherwise would have been offered on the spot market before the end of the month.

Lubrication Situation

The reduction in lubricating oil prices in Oklahoma is considered an adjustment to bring the Group 3 quotations in line with quotations already established in other areas. Weakness has been apparent in lubricating oils for several weeks following an advance in the late summer and early fall. The Pennsylvania and other eastern oils led in the advance and also the decline, the Pennsylvania grade bright stocks selling under 20 cents per gallon since late in December. The decline there, was explained as due to a collapse in the export demand following a buying spurt which brought about the early fall rally.

Various reasons have been assigned for the weak lubricating oil market extending over the greater part of the past two years. On the demand side, the latest Bureau of Mines report, covering November of last year, shows that the export demand for that month was 19.5 per cent less than the same month of the previous year and the domestic demand 23 per cent less. For the 11-month period ending November 30, 1931, compared with the same period in 1930, exports declined 19.2 per cent and the domestic demand 7.1 per cent. Normally about one-third of the lubricating oil manufactured at refineries in United States is sold in export channels and the remainder is absorbed in domestic markets.

Slow Industrial Demand

In regard to industrial lubricants, the past year has been the dullest period of the past 10 years according to those familiar with market conditions. The lack of industrial activity has been reflected directly in purchases of lubricants and refiners and compounders who specialize in the industrial field have seen a steady decline in their sales so that in some cases they have been less than 25 per cent of the 1929 peak.

In motor oils the fact that consumption has decreased the past year despite the 2 per cent increase in gasoline consumption, shows that car owners are not using as much oil per car mile as formerly. Those in touch with the retail end of motor oil distribution state that car owners are not changing their crankcase oils as often as formerly and this in effect means a reduction in consumption per car. This trend is apparently due to a desire for greater economy in oil consumption on the part of the car owner and also due to the fact that many refiners are stressing in their advertising and sales campaign that it is not necessary to change their oils as often as formerly. The practice of changing oil every 500 miles is being supplanted by changes for 1,000 and 2,000 miles and even longer periods.

In the export end, the large decline in shipments is in line with the trend in gasoline, kerosene and other products. Depressed industrial conditions has brought a greater decline in foreign consumption than it has in this country and in addition export shipments from this

(Continued on Page 166)

REFINED MARKET BAROMETER

Price changes in refinery markets over the past week were scattered. High octane gasoline was advanced at Atlantic Seaboard, fuel oil and gasoline prices were lowered in California and prices on lubricating oils were reduced in the Mid-Continent. These were the only important price changes of the week. The recent advance in Mid-Continent and Middle West gasoline prices was stopped and more material was offered at current quotations. Kerosene continued generally firm with a satisfactory movement in furnace oils. Industrial fuels and gas oils except for the West Coast reductions were steady. Natural gasoline quotations unchanged. Wax prices reduced in the East.

Mid-Continent—Demand for refinery and natural gasolines not as active and price advance stopped. Kerosene, tractor fuel and furnace oil firm. Bright stock and neutral oil prices lower. Heavy fuels and gas oil unchanged.

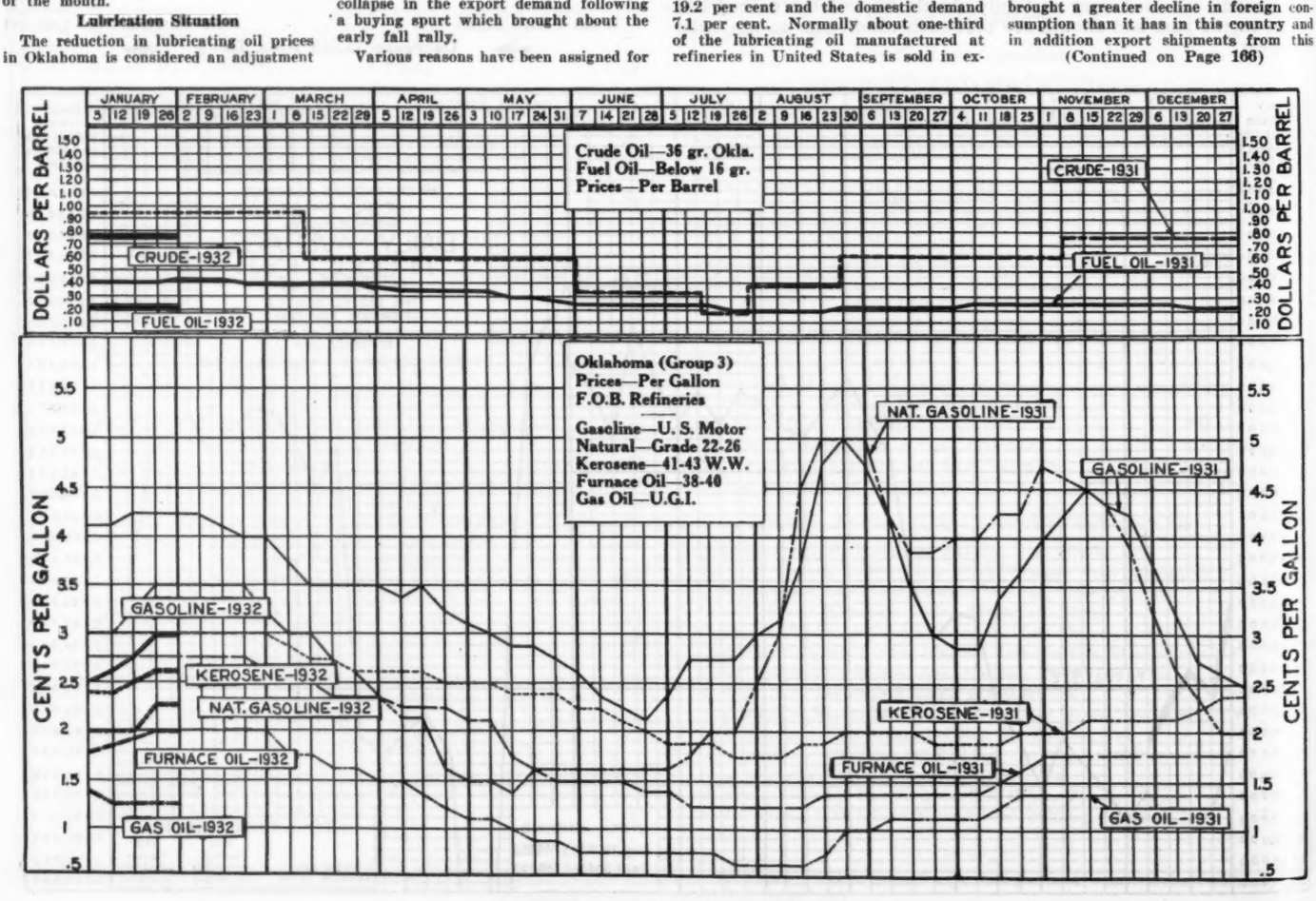
East Coast—Refiners advance high octane gasoline one-half cent. Kerosene strong, both for export and domestic movement. Lubricants inactive with no general changes in prices. Wax prices lower. Fuels unchanged.

Chicago—Gasolines easier with more offers from refiners than earlier in the month. Kerosene and furnace oil firm. Fair demand for fuel oil.

Pennsylvania—Slow demand for gasoline. Kerosene firm. Neutral oil quotations reduced. Bright stocks unchanged.

Gulf Coast—Gasoline slow. Fair demand for neutrals. Few inquiries for fuel oil.

California—Domestic gasoline prices lower reflecting unsatisfactory retail market. Fuel oil prices lower on contract and spot movement.



Oil Industry's Amazing Record in 1931

One Business That Had an Increase in Domestic Demand But Sold Its Products at Panic Prices. Better Outlook This Year

By W. T. Anderson

Any business that came through 1931 holding 97.5 per cent of its market despite world conditions made an amazing record. What other major industry can match the gasoline industry in maintained volume of consumption in the midst of general depression?

Unfortunately there is a more amazing factor also in the record. Notwithstanding this well sustained demand the price of motor fuel fell to the lowest quotation in years.

The average price of the principal refined product in practically all refining areas was lower than at any time since petroleum refining became a major industry. In many cases the average price for the year was from 25 to 40 per cent under the price of the previous year.

The data show that the average refiner in the Mid-Continent, under well balanced skimming and cracking operations, based on open market quotations, obtained an overall revenue of but $1.10 per barrel of crude oil refined during the disastrous year just past.

It was inevitable that this condition in the refiners' market should be reflected in the industry's wholesale and retail markets, bringing reduced prices, greater discounts and many other like evils which always attend a period of overproduction.

Although there were disappointments in regard to the demand for some refined products a study of the data available fails to furnish justification for the low prices which prevailed throughout the greater part of the year.

The Bureau of Mines report for the first eleven months (December figures not yet being available) show that the domestic demand for motor fuel during that period amounted to 372,784,000 barrels, an increase of two per cent over the corresponding period of 1930.

Exports of motor fuel totaled 43,141,000 barrels, a decrease of 29.5 per cent in the same period.

Adding domestic and export consumption we find a total of 415,325,000 barrels which is only 2.5 per cent less than the total demand in the previous period.

Surely an industry which enjoyed the largest domestic demand for its principal product and whose total export and domestic demand was 97.5 per cent of its peak should have had a better revenue report to make than that made by the refining branch of the oil industry.

Other Products

Gasoline is not only the principal product of the petroleum industry but it now registers approximately 50 per cent in bulk. The demand for other products was not so favorable but on the whole far better than the average of other industries.

Based on the eleven months' comparison, 1930-1931, the domestic demand for kerosene decreased 12.5 per cent and exports 22.5 per cent but it is worthy of note that despite this decrease in both domestic and export consumption stocks of kerosene were 23.9 per cent lower Nov. 30, 1931 than on the same date in the previous year, a situation that should have some influence in more satisfactory prices during the present year.

In lubricating oils the domestic demand for the eleven months was 7.1 per cent less and exports were 19.2 per cent less but with stocks 10.6 per cent less lubricants are in a stronger statistical position also.

Comparative data are not available for gas oil and fuel oil but partial figures indicate a total demand of probably 90 per cent of the previous year.

Crude Oil

In crude oil production 1931 showed remarkable gain in curtailment although without compensatory price improvement because of overhanging potential and a weak-price gasoline market.

The number of active wells decreased from 327,268 in 1930 to 299,104 last year, due largely to wells not operating because of market conditions. The average production per well was 7.75 barrels per day compared to an average of 7.6 barrels the year before.

Only three states showed increased production of crude, Texas, Michigan and New Mexico, and in Texas the increase was all in East and East Central Texas, the Gulf Coast, Southwest Texas, West Texas, North Central Texas and the Panhandle showing decreases.

Many new producing spots were found in the Gulf Coast, Southwest Texas and Kansas, but were not developed because of the East Texas flood.

The number of wells drilled was the smallest since 1898, there being but 12,245 completions last year against 21,240 in 1930 and a 32 year average of 21,130. Of the completions 6,703 were oil wells against 11,640 the previous year.

The records show that during the past 25 years we have drilled an average of 15,000 new oil wells a year to maintain production but at the beginning of 1931 we had a surplus of oil even without East Texas.

With a potential production of 5,000,000 barrels a day and a demand for only 2,317,000 barrels daily, 46 per cent of the potential, the producing industry tightened its belt and cut crude production almost 56,000,000 barrels last year, the total of 845,803,000 barrels being the smallest production from American fields since 1926.

This check on overproduction is the most encouraging factor in the situation. In view of the facts as to potential it was the only action to take. This was demonstrated when East Texas ran wide open and oil fell to 10 cents a barrel.

That object lesson was worth all it cost because no one now believes that even if martial law were lifted by court order in East Texas tomorrow the producers in that district would return to the conditions that prevailed when that restraint was imposed.

There is every reason to believe, as President Beaty of the American Petroleum Institute believes, that "the Texas Railroad Commission could enforce proration just as it is now enforced in other Texas fields," aided by the good sense of operators in supporting a sensible regulation.

With all the oil that is needed being produced now at a set price any attempt to break down that regulation would simply break down the price and bring a return of chaos, profiting nobody.

Starting Point Upward

The hope of the oil industry is to maintain its equilibrium, to hold its ground as a starting point upward. Every commodity market is watching prices, knowing that the first sign of recovery will be a period of steadiness marking the end of declines and the precursor of an upward movement.

Refinery prices of motor fuel at the close of the year were from 30 to 40 per cent of what they were in 1926, a normal year. Net retail prices for gasoline averaged but 12.9 cents against 14.5 cents the previous year, closing the worst six months in the history of the marketing industry.

But that low record has been passed and it is generally felt the refined market can be strengthened so that the industry may enter the main consuming season under favorable conditions.

This will depend, however, upon how closely the refiners approximate the required proration in stocks by April 1. There are indications that they fully understand the danger of excess stocks and that by that date supply and demand will be, as President Beaty hopes "fairly well in balance".

Crude producers have been told there can be no hope for improvement in crude prices while gasoline prices are weak but they must also remember that there can not be a strong gasoline market while there is overproduction of crude.

If the refiners are supported in their efforts to improve the gasoline situation by consistent curtailment of overproduction by producers of crude the oil industry as a whole will see better days.

While other major industries have had their markets shot from under them and been obliged to not only curtail overproduction but to reduce their output far below normal the market for the oil industry's main product has been comparatively unaffected.

The fundamental soundness of the oil industry's structure is shown by the record during the past year that despite a reduction in the registration of motor vehicles for the first time in history there was actually a two per cent increase in the domestic consumption of gasoline, indicating that there was an increased consumption per car.

Notwithstanding our being in the midst of a depression the main product of the oil industry occupied such a position as a necessity that even with the contraction of business there was an expanded use of motor fuel. Any measure of return to normal must bring a corresponding increase in business to the oil industry an increase that will start near the peak, instead of, as in so many other businesses, fifty per cent or less below normal.

Oil Field Electrification Discussed

Problems Involved Are Subject of Two-Day Conference in Fort Worth Under Auspices of Petroleum Electric Power Club

FORT WORTH, Tex., Jan. 23.—Problems involved in the electrification of pipe lines were discussed by William G. Heltzel, Tulsa, general superintendent of the Stanolind Pipe Line Co., at the opening session of the electrical utilities power conference as applied to the petroleum industry, held in the Texas Hotel here Tuesday and Wednesday of this week. Other discussions and reports rounded out an interesting program. The conference was held under the auspices of the Petroleum Electric Power Club, and F. A. Graham, of the Kansas City Power & Light Co., retiring chairman of the club, presided over the conference.

Mr. Heltzel, whose subject was "Economic Problems of Electric Service for Pipe Line Pumping," expressed the wish that his remarks might be construed as constructive criticism, given in the spirit of helpfulness. He said he hoped that there were a number of electrical rate engineers present, but he was sorry he could not include them in his general approval. About 1926 the power salesmen came knocking at the door of the pipe line companies, said Mr. Heltzel. In 1927 they were pounding rather insistently and in 1928 they took the doors off the hinges. They had done an excellent job in electrifying oil pipe lines and there was a decidedly better understanding by rate engineers of the problems confronting the pipe liners. Mr. Heltzel discussed the demand charge, variation in contract forms, variation in rates and rate forms and illustrated his remarks with slides.

Developments in Pipe Line Pumping

W. H. Stueve, Oklahoma Gas & Electric Co., Oklahoma City, presented his report on "Recent Developments in Pipe Line Pumping." Tuesday afternoon, setting out accomplishments of 1931 and what it was hoped to accomplish in 1932. He discussed the use of centrifugal gas and electric compressors and the possibility of developing business from this source. This report was discussed by D. C. McKee, Empire District Electric Co., Joplin, Mo., and D. H. Levy, Magnolia Pipe Line Co., Dallas, Tex. General discussion followed in which it was suggested that the Petroleum Electric Power Club might well devote some time and energy to the accumulation of data relative to the cost and economic factors of oil engine operation in oil pipe line pumping.

Upon motion of W. S. Baugh, Wichita, Kans., the chairman was authorized to appoint a committee to work with the committee of the A.S.M.E., of which Mr. Heltzel is chairman, in a continuation of studies of oil engines in pipe line service. Mr. Heltzel stated that this committee had been dormant and he wanted it understood that it was not to be revived unless he had the wholehearted co-operation from this group. Mr. Graham appointed a committee from this group to work with A.S.M.E. committee.

The report of the refineries' commit-

(Continued on Page 162)

ACTIVE IN THE MEETING OF ELECTRICAL MEN AT FORT WORTH

1—P. M. Cordell, Texas Electric Service Co., Fort Worth. 2—Left to right: J. E. Elliott, power engineer, Southwestern Gas & Electric Co., Shreveport; C. O. Dunten, commercial manager, Central & Southwest Utilities Co., Dallas; and Edwin W. Vennard, general commercial manager, Southwestern Gas & Electric Co., Shreveport. 3—D. H. Levy, Magnolia Pipe Line Co., Dallas. 4—Left to right: G. R. Prout, General Electric Co., Dallas, and M. M. Boggess, General Electric Co., Kansas City, Mo. 5—Left to right: R. T. Shiels, district manager, industrial department, General Electric Co., Dallas, and S. C. Hogg, Texas Power & Light Co., Dallas. 6—Left to right: O. A. Jennings, Oklahoma Gas & Electric Co., Oklahoma City; and F. A. Graham, Kansas City Power & Light Co., Kansas City, Mo.

Field Operations Suffered in 1931

Not Since 1898 Have so Few Wells Been Completed. East Texas the Only Very Active Field During the Year

By James McIntyre

Fewer wells were drilled for oil and gas in the United States last year than in any year since 1898, and fewer oil wells were brought in than in any year in the 31 years between 1899 and 1930, both inclusive.

In only one field, East Texas, were there more wells completed in 1931 than in 1930. The tremendous actual potential production of oil and consequent low prices offered for the product held down drilling in every producing division save one from New York to California.

A total of 12,245 wells was completed last year in the United States, of which 6,703 were oil wells, 1,982 were gas wells and 3,560 were dry holes. In 1930, 21,240 wells were completed, of which 11,640 were oil wells, 2,866 gas wells and 6,734 dry holes. Completions last year declined 8,995, oil wells 4,937, and gas wells 884, while 3,174 fewer dry holes were drilled.

For a quarter of a century it had been necessary to complete an average of 15,000 oil wells annually to maintain production in line with demand, but it was not necessary last year. When the year opened there was already a large overproduction of oil, and a new field, East Texas, threatened to add another to the list of large producing areas. In every state where oil is produced curtailment movements of one kind or another were either in operation or being discussed, and with the fear of East Texas and the threat of starvation prices for crude oil facing them, oil operators held back from exploratory or development work. As the year progressed and conditions grew worse, all thought of drilling outside of flush and semiflush fields was dismissed by oil companies, large and small, and by many individual operators, excepting on properties where lease obligations necessitated the drilling of wells. At the close of the year it was indicated that about 9,000 locations, which would have been drilled within the year in normal times, and on which new production would have been developed, remained untouched. Even with curtailed drilling the flood of oil subsided only by the application of curtailment measures, which in two states were enforced by martial law ordered by governors.

East Texas the Busiest Field

The greatest amount of drilling operations last year was in the East Texas Field, where production was found in Rusk, Gregg, Upshur and Smith Counties on an immense structure occupying a part of each of the counties named. There were 1,513 wells completed in Gregg County, of which 42 were dry holes; 1,551 wells in Rusk County, of which 44 were dry; 155 in Smith County, including 15 dry holes, and 177 in Upshur County, of which 16 were failures. The total number of completed oil wells in the four counties up to the close of the December report was 3,279. The initial production of these wells is unknown because the only available record of initial production was brief gauges of hundreds of these wells, ranging from a few minutes to an hour. The Oil and Gas Journal, through its correspondents and by direct correspondence with capable veteran production officials and engineers, could not obtain better than widely varying estimates of what the average initial 24-hour production of East Texas wells would have been if they had all been permitted to make such a test. The initial production figures for East Texas used in the accompanying table represent only the volume of crude oil the wells produced on gauges of a few minutes up to a few hours, with the rare exception of an edge well here and there, the initial production of which was not as much in 24 hours as many of the wells made in one hour. Thirty-two East Central and East Texas counties were explored for oil last year, but in only six of them was production found. Two hundred and ten dry holes were drilled in the 32 counties, of which 158 were drilled in the 10 counties producing oil. Nacogdoches County, in which oil was first discovered in Texas about 45 years ago, received 14 drilling tests last year, all of which were dry. In Van Zandt County, in which the Van Field lies, 107 new wells were completed, including 17 dry holes. The oil wells completed were all in the Van Field. In the counties along the Texas-Louisiana border, an area carried separately under the name of the East Texas gas field, 52 dry holes were drilled, most of them in an effort to locate oil, following the discoveries to the west. In Harrison County alone, 17 dry hole tests were drilled.

No New Fields in Oklahoma

No important new fields were opened in Oklahoma. Oklahoma County led in the number of wells drilled and in the course of the year 240 oil wells were added to the Oklahoma Field, the average initial production of which was estimated at 7,400 bbls. per well. Only eight dry holes were drilled in the county. The close of the year saw the Oklahoma City Field not yet entirely defined, but that part of the undefined area lying within the city limits will always be restricted as to drilling operations. The richest part of the field proved to be the northern end of it, where the Wilcox sand was found to be a very thick and highly saturated body, which will yield an enormous production per acre. Creek County was second in the number of wells completed, but of the 132 wells drilled only 50 were productive of oil, 31 were gas wells and 51 dry holes. Many of these wells were drilled to fulfill lease obligations. In Seminole and Pottawatomie Counties, in which the Seminole Field and the St. Louis Field are located, only 92 wells were drilled, or less than two per week, and of these 62 were oil wells averaging 1,800 bbls. per well in initial production. Wells were completed in 50 counties, but in 28 of these no oil was found. The slump in field operations is best shown by the fact that in January 198 wells were completed and in November and December 54 each. August was the dullest month, with 39 completed wells.

Little work was done in fields opened in 1930 because of the unfavorable situation.

Discoveries in Kansas

Thirty-nine Kansas counties were explored last year, but only 470 wells were completed as against 1,036 in 1930. The busiest area was McPherson County, where 173 wells were completed, including 109 oil wells, 52 gas wells and 13 dry holes, a very high percentage of successes. The Ritz-Canton and Voshell oil fields and the Decker gas field are in McPherson County. In all the old producing counties like Butler, Sedgwick, Cowley and Greenwood, it was a dull year in the field, Sedgwick leading with 49 completions. In the month of September only 25 completions, or less than one a day, were recorded in the State, and in December only 28 completions.

Important discoveries were made in Kansas in the course of the year. Wildcatting on the Ellsworth or Barton Arch, which occupies a part of Russell, Rice, Stafford, Barton and Reno Counties in the west central part of the State, uncovered a score of productive spots at wide intervals. Operations were not followed up because of a lack of crude oil outlet, and generally bad conditions in the industry, but this region is sure of big development at some future time. The Ritz-Canton Field and the Decker gas area were extended and both were valuable discoveries.

Eight New Pools Opened

While there were 630 fewer wells completed in the Gulf Coast fields of South Texas and South Louisiana, field work having been kept to the lowest level in years, eight entirely new fields were discovered, and deeper sands and extensions in older fields were uncovered, including the Beach Field in Montgomery County, Texas; Leesville, La Fourche Parish, Louisiana; Rabbs Ridge or Clear Lake, Fort Bend County, Texas; Lake Grand Ecaille, Plaquemines Parish, Louisiana; Bayou Choctaw, Iberville

(Continued on Page 164)

SUMMARY OF COMPLETED WELLS IN ALL THE FIELDS OF THE UNITED STATES IN 1931 AND 1930

		Comp.	Initial prod. (bbls.)	Dry holes	Gas wells	Oil wells	Ave. int. prod. (bbls.)
Eastern	1931	1,726	4,111	316	679	731	5.6
	1930	3,874	20,442	438	667	2,769	7.4
Central Ohio	1931	574	2,999	161	295	118	25.4
	1930	1,129	14,888	342	440	347	42.9
Lima	1931	148	940	24	90	34	27.7
	1930	205	1,663	39	72	94	17.7
Indiana	1931	162	1,492	80	47	35	42.6
	1930	215	2,498	79	55	81	30.8
Kentucky-Tennessee	1931	424	12,122	125	120	179	67.2
	1930	1,122	37,745	320	169	633	59.6
Michigan	1931	127	38,947	48	30	49	794.8
	1930	295	25,729	115	29	151	170.4
Mississippi	1931	76	.....	40	36	.....	.....
	1930	60	100	28	31	1	100.0
Missouri	1931	4	.....	4	.....	.....	.....
	1930	8	.....	8	.....	.....	.....
Illinois	1931	39	107	25	1	13	8.2
	1930	204	3,042	84	3	117	26.0
Kansas	1931	470	144,921	129	112	229	632.8
	1930	1,036	228,296	423	168	445	513.0
Oklahoma	1931	1,058	1,941,805	374	186	498	3,899.2
	1930	3,466	5,628,234	1,002	403	2,061	2,730.8
North Central Texas	1931	1,055	31,246	677	78	300	104.2
	1930	2,909	138,500	1,624	133	1,152	120.2
East Central Texas	1931	184	244,846	93	7	84	2,914.8
	1930	305	621,090	125	6	174	3,569.5
East Texas	1931	3,396	2,205,851	117	.....	3,279	*672.4
	1930	15	15,560	7	.....	8	1,945.0
East Texas gas area	1931	58	.....	52	6	.....	.....
	1930	37	.....	8	29	.....	.....
West Texas	1931	321	53,884	148	3	170	317.0
	1930	733	357,669	253	5	495	723.4
Panhandle	1931	199	33,317	29	77	93	358.2
	1930	587	178,878	72	172	343	521.6
Gulf Coast	1931	544	162,638	230	22	292	557.0
	1930	1,361	475,029	497	44	820	579.3
Southwest Texas	1931	624	65,114	380	51	193	337.8
	1930	1,193	430,393	512	95	586	734.5
North Louisiana	1931	258	22,842	130	76	52	439.3
	1930	746	55,257	279	254	213	259.4
Arkansas	1931	60	4,128	36	5	19	217.3
	1930	127	6,214	69	12	46	135.0
Montana	1931	96	809	47	36	13	62.2
	1930	182	5,791	68	40	74	78.2
Wyoming	1931	71	10,759	22	9	40	269.0
	1930	152	24,059	35	17	100	240.6
Colorado	1931	27	2,766	12	5	10	276.6
	1930	57	969	34	10	13	74.5
New Mexico	1931	58	80,625	21	11	26	3,101.0
	1930	209	1,099,268	36	11	162	6,785.6
Utah	1931	2	.....	2	.....	.....	.....
	1930	4	.....	3	1	.....	.....
California	1931	484	364,434	238	.....	246	1,481.4
	1930	1,009	584,521	254	.....	755	774.2
Total	1931	12,245	5,430,703	3,560	1,982	6,703	810.2
Total	1930	21,240	9,955,835	6,734	2,866	11,640	855.3
Difference		8,995	4,525,132	3,174	884	4,937	.....

Record of Past 10 Years

Total	1931	12,245	5,430,703	3,560	1,982	6,703	810.2
Total	1930	21,240	9,955,835	6,734	2,866	11,640	855.3
Total	1929	26,356	6,170,311	7,914	2,870	15,572	396.3
Total	1928	22,331	8,365,778	7,078	2,727	12,526	667.9
Total	1927	24,143	4,918,197	7,210	2,491	14,442	340.4
Total	1926	29,319	3,683,787	7,965	2,341	19,013	193.7
Total	1925	25,623	4,300,356	6,735	2,330	16,558	260.0
Total	1924	21,894	3,255,491	4,950	2,173	14,771	221.0
Total	1923	23,438	6,105,100	5,883	2,349	16,206	371.0
Total	1922	24,658	4,226,119	5,329	2,011	17,318	244.0

MacArthur Chose Just the Right Moment

Colonel Carter Was Full of Good Humor and Thanksgiving Turkey When Present Barnsdall Manager Asked for Oil-Field Job

By Thomas F. Smiley

The fact is if Robert F. MacArthur, manager of the Barnsdall Oil Co., had not selected just the right moment he might never have got into the oil business at all. But he did select the right moment, selected it with subtle cunning and finesse. It was the moment when Col. John J. Carter, president of the Carter Oil Co. and in a position to hand out jobs if and when he willed to do so, was certain to be in a cordial, complaisant mood. It was the moment, to be more particular, when Colonel Carter had just finished a thoroughly satisfying dinner on Thanksgiving Day, 1896, and had settled down to the mellowing influence of a good cigar.

This peculiarly fortuitous setting came about through Colonel Carter and Robert MacArthur being dinner guests in the home of a common friend in New York. Bob already had a job in the motion picture industry, such as it was. That is, the motion picture industry, such as it was, and a job, such as it was. But he wanted a fresh-air job. He had tried to get work on a pineapple plantation in Hawaii. He had tried to get it in the wheat fields of the Northwest. But the destiny that is reputed to shape human ends reached out a detaining hand and held him for a vocation in which he was to find fresh air in abundance, not to mention other things not regularly listed or classified.

Colonel Carter, glowing with the genial good humor that comes from two helpings of roast turkey, with a little more of the stuffing please, was contemplatively introducing thin streams of blue smoke into the atmosphere when Bob, giving his words just the right degree of deference, with a suggestion of earnest appeal, spoke:

Future and Fresh Air

"Colonel, I have been wanting to get into the oil business, and it has occurred to me that you might have an opening for me down there in West Virginia. I'm not afraid of work, you understand, and I'm anxious to get a job where there's plenty of fresh air. I wouldn't expect an important position or big pay at the start, you know, but I feel there's a future for a fellow in the oil business, and—and there's the fresh air I spoke about, and—"

"There's altogether too much fresh air right now," replied Colonel Carter. "This is no time of the year to start working in the Sistersville oil field. Tell you what you do. You write to me about the first of April and I'll see what can be done."

If Colonel Carter supposed that a little suave procrastination would make Bob forget about an oil field job and fresh air, he guessed wrong, for on March 31, A.D., 1897, a carefully phrased letter addressed to Col. John J. Carter and signed "Yours truly, R. F. MacArthur," was on its way from New York to the colonel's home in Titusville, Pa.

The president of the Carter Oil Co. kept his promise to see what could be done, and the thing he did was to direct Bob MacArthur to report to John Eckbert, manager of the company's interests in the Sistersville Field. Bob reported, and here began a career which, starting at the bottommost rung of the oil industry's ladder, moved through the whole wonderful history of oil field development in Oklahoma. It has been a successful career. Not only that, but its owner and general manager admits he has had a lot of fun out of it.

The MacArthurs were residing in New York when Robert F. added himself—or was added, whichever way you want to put it—to the population. That was in 1872. The so-called happy school days were spent at Lake Mohegan School, a military boarding school for boys near Peekskill, N. Y., and Columbia Grammar School, which prepared its students for Columbia University in New York. Instead of entering Columbia, however, the boy was sent to Brown University, Providence, R. I., where he took a scientific course, getting preliminary training along certain lines that was to prove useful later.

Higher Education Began to Pall

In his junior year Bob found himself viewing higher education with steadily waning enthusiasm. His enthusiasm declined to such a low point in fact that he persuaded his father to let him quit college and go to work. Mr. MacArthur devotes precious little time to regrets, but he does wonder now and then why he didn't finish the college course so nearly completed or why somebody with a big club and a six-shooter didn't make him. Also he has come to favor the democratic, somewhat rough-and-ready environment of the public school as against the exclusive and sometimes snobbish atmosphere of the private school.

Well anyway, at the age of 20 Robert tossed his textbooks aside and went to work for the Essick Printing Telegraph Co. in New York. These printing telegraph machines afforded a news bulletin service similar to that of the stock exchange ticker and it was his job to assemble and adjust them in offices of clients. He was with the company two years.

Do you remember the American Biograph Co., unrecognized at the time as a herald of the mammoth motion picture industry that was to be? Well, young MacArthur entered the employ of that pioneer organization and for the next two years contributed his talents to the task of trying to convince the public and himself that the blurred, shadowy, jerkily fantastic figures which it produced were a form of entertainment and not a wellthought-out method of ruining the eyes.

"Hollywood" on a Broadway Roof

There were no studios in those days. The subjects were "shot" in the sunlight on the roof of a building at Thirteenth Street and Broadway, New York. Efforts to inveigle vaudeville artists into appearing before the primitive moving-picture camera met with little success. Mr. MacArthur recalls Sandow, the strong man, as one of the few who did not regard it as beneath their professional dignity to pose and disport themselves self-consciously on the rude stage provided.

The Biograph company made both the reels and the machines for projecting them. There were no movie houses, and the jumpy, spectral screen productions were used merely as a supplementary feature of vaudeville shows. It was Bob's job to install and operate the projecting machines in theaters throughout the country. One night in a theater in Louisville, Ky., he discovered a blown-out fuse had made the machine useless for the time being. It was almost time for the pictures to be shown. The house was dark while a vaudevile sketch was being presented and Bob groped his way from the gallery to the stage, where he explained the situation to the manager. The manager said that the people had paid their money especially to see these pictures and that this was a hell of a time to be finding out that the machine wouldn't work. He went so far as to insinuate that the whole thing was a humbug.

The vaudeville sketch ended. The pictures were next on the program. The argument between Bob and the manager was still on.

"You go on out there yourself and tell the audience why that damned machine of yours won't work," ordered the manager.

Bob protested heatedly it was no fault of the machine, but the irate manager gave him a vigorous push from the wings toward the center of the stage, at the same time opening the curtain and switching on the lights. There stood Bob, a disheveled, perspiring figure in shirtsleeves, while an impatient audience eyed him hostilely. Bob stammered some kind of explanation from which it was gathered that for reasons not wholly clear there would be no moving pictures. Catcalls followed him from the stage, but to his relief nobody threw anything.

Entered Oil Industry With a Shovel

This was the work in which young MacArthur was engaged when he landed a job with the Carter Oil Co. through his diplomatic approach to Colonel Carter already described. Arriving in Sistersville in conformity with the directions given him by the colonel, he was assigned by Mr. Eckbert to the yard gang, whose duties consisted chiefly of unloading railroad cars of coal, coke, oilfield equipment, etc., and loading or unloading barges in the Ohio River. Bob had been receiving $25 a week from the Biograph company. He got $50 a month for his services as a shoveler. Of course he got plenty of the fresh air for which he had yearned, but during the first few weeks there were moments when he found himself speculating as to whether the oil industry's opportunities were so golden after all.

The company operated a pump station on the bank of the Ohio River and alongside the Ohio River Railroad, at Russell Station, 4 miles northwest of Sistersville. The pump station, which drew water from the river for conversion into steam for well pumping, used natural gas as fuel, but frequently it was necessary to supplement this with coal. The company had an arrangement with the railroad by which when a car of coal was shipped for its use the freight train containing the car would stop beside the pump station for one hour while the coal was unloaded into the bin beside the track. Five men—all that could work in a coal car at one time without danger of damaging each other with the shovels—were set to unloading in order to empty the car within the hour prescribed. When the job was done the men had to walk the 4 miles back to Sistersville.

One night when one of these cars had to be unloaded Bob and Nelson K. Moody, who later was to become president of the Prairie Oil & Gas Co., were among the five men wielding the shovels. It was pitch dark when the task was

(Continued on Page 162)

KNOCKED THE NONSENSE OUT OF THEM

It is not difficult to understand the pride evinced by oil men who underwent apprenticeship in Colonel John J. Carter's "training school." Anybody who survived that experience entered into a fellowship akin to that which binds men who have faced common dangers and crises. Not that there was the faintest semblance of oppression. Far from it. It was an experience, however, which knocked the nonsense out of beginners and it effectually culled out those looking for a soft snap. Those who remained after the rigorous winnowing process were like the members of Gideon's band. They meant business. And these were the men whom Colonel Carter gladly rewarded with promotion as fast as promotion was earned.

Robert F. MacArthur

Colonel Carter's real attitude toward men under him is illustrated by his course when he was managing director of a manufacturing company in Titusville, Pa., for it must be remembered that besides being one of the oil industry's colorful figures he was a student, a soldier, a railroad builder and a keen-visioned business man. In 1900 Colonel Carter urged the company to adopt a plan under which employes would get the same dividend as the stockholders, to be based on each man's pay. If an employe earned $1,500 in the year and there was a dividend of 10 per cent., that employe should receive 10 per cent. on the $1,500, or $150. The stockholders went half way and approved an employes' dividend of 5 per cent. Colonel Carter was gratified, but he continued to contend that employes were entitled to the full dividend rate.

"This is a fixed purpose of mine," said the Colonel. "I am going to present it at each annual meeting until it is adopted as a principle."

The stockholders balked at going the whole distance with Colonel Carter, with the result that eventually he sold his interest and left the company.

Bowling Green Refining Company Completes Small Modern Topping Plant

* * * * * *

Built primarily to refine the 1,000 bbls. of high sulphur crude being produced in the settled fields of Warren, Allen and Simpson Counties of Kentucky, the new plant of the Bowling Green Refining Co. at Memphis Junction, embodies the latest improvements in the design of a small topping plant.

The new refinery is located 3 miles south of Bowling Green and the company expects to market its gasoline and kerosene in the local area. The greater share of the gas oil and fuel oil will probably be shipped to industries in the southeastern states.

The topping unit has a capacity of 1,000 bbls. per day and has been specially designed to refine the 1 per cent sulphur crude produced locally. Corrosion will be minimized by the injection of anhydrous ammonia in the vapor stream and a special method of keeping the condensers continuously washed out with water is expected to hold replacements at this point to a small amount.

* * * *

The general arrangement of the equipment is very compact, practical and yet very complete for the purpose of producing a 400 endpoint motor fuel, 42 to 44 gravity kerosene, 34-36 gravity gas oil and fuel oil bottoms.

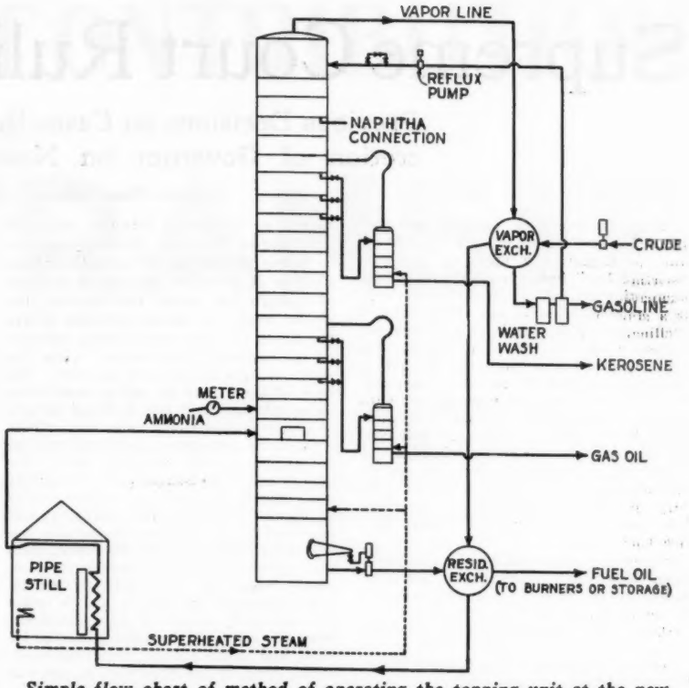
The distilling equipment consists of a pipe still including banks of tubes to utilize convection and radiant heat, a fractionating tower and two auxiliary stripping towers to finish side streams of kerosene and gas oil. The tower is filled with the conventional bubble cap sections and control is accomplished with an open spray pump-in over the top of the tower, using a condensed portion of the overhead stream as reflux.

The operation of the tower and still is correlated by automatic controls, the adjustments being made to yield a 400 endpoint gasoline. The control of the auxiliary towers is facilitated by injecting superheated steam into the kerosene tower and into the gas oil tower. This steam is superheated in a coil within the pipe still.

One of the features of the plant is the manner of keeping the condenser coils from corroding excessively. This is accomplished by injecting anhydrous ammonia into the tower and water washing the gasoline vapors as they enter the condenser. This water washing condenses the gasoline vapors quickly and the presence of relatively large quantities of water is expected to keep the coils free of corrosion. The ammonia will be metered as it is injected into the tower and the control of the amount of ammonia to be injected is centered in the acidity of the stream coming from the condensers.

A weak caustic solution will also be allowed to stand in the rundown tanks and storage tanks for the raw products. A system of line washing is also practiced in which a weak caustic solution is pumped through the transfer lines from and back to the agitators. With the use of ammonia and a caustic solution, the company expects to fully equalize the corrosive properties of the crude and at the same time, the use of ammonia has been found beneficial in the final treatment of the gasoline and kerosene to render them doctor sweet and able to pass the copper strip corrosion test. In addition to the chemical treatment given these products the gasoline and kerosene are given a clay treatment and then filtered.

This is done in a rather simple but effective manner. The filterers operate alternately and each is composed of a perforated 6-inch pipe, approximately 8 feet long, around which is wrapped a strong muslin cloth and fine copper wire. A 10-inch pipe of the same length forms the outer wall. Hi-flow is used as the filter medium and is drawn into the suction of the pump along with the oil. The mixture has sufficient time of contact during the time it is pumped to and in the filter and as the earth is deposited on the cloth, the gasoline and kerosene is run to finished storage, sweet and noncorrosive.



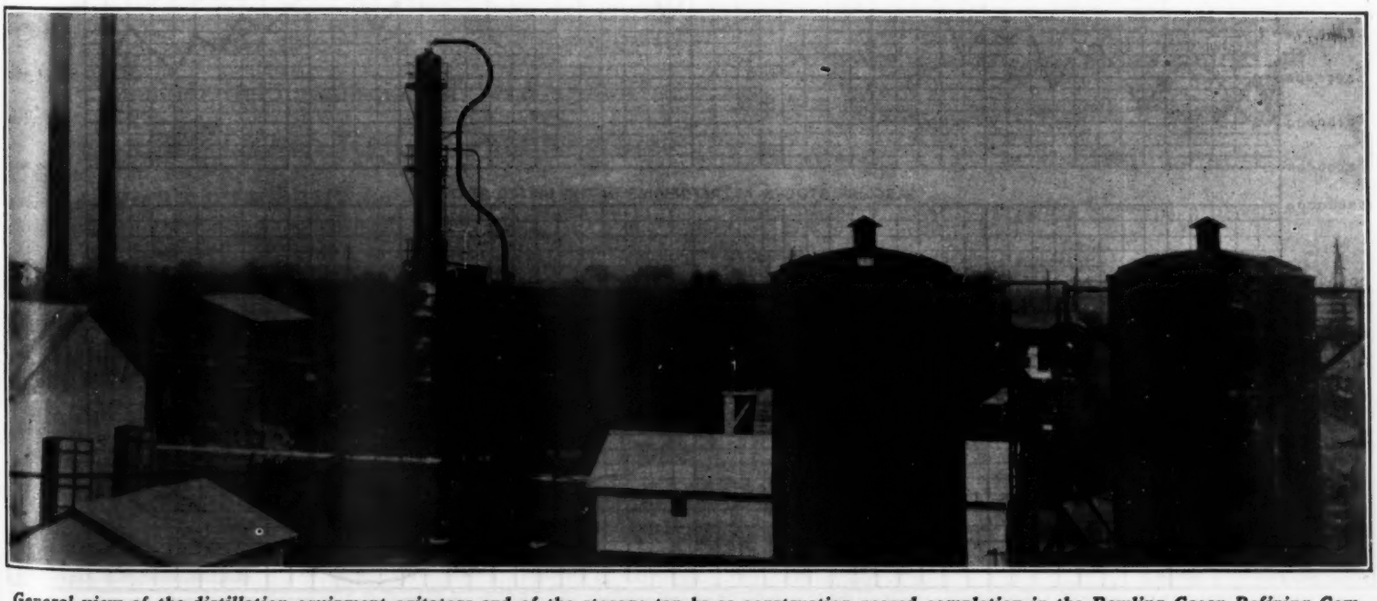
Simple flow chart of method of operating the topping unit at the new plant of the Bowling Green Refining Co., near Bowling Green, Kentucky.

* * * * * * * *

The crude to be refined is expected to yield approximately 28 per cent 400 endpoint gasoline, 10 per cent 42 to 44 gravity kerosene, 15 per cent 34 to 36 gravity gas oil and about 44 per cent fuel oil.

At present the loading rack platform has been provided since it is the aim of the management to sell the majority of the products locally. A six-car switch, however, is installed and the loading pipes have been arranged.

Crude oil will be delivered to the Bowling Green Refining Co.'s line by the Ohio Oil Co., which has completed a system of gathering lines in the field. Retail stations offering the gasoline made at the new plant will also handle the Ohio Oil Co.'s line of lubricating oils, as no lubricating oils will be manufactured in the new plant. The design of the equipment and its erection was handled under contract by the Leader Industries, Inc., as a turn-key job, in cooperation with the Bowling Green Refining Co.'s superintendent, S. E. Davis.



General view of the distillation equipment agitators and of the storage tan ks as construction neared completion in the Bowling Green Refining Company's plant.

Supreme Court Rulings on Martial Law

Previous Decisions on Cases Before the Highest Tribunal. Discretion of Governor on Necessity Accepted as Conclusive

Extracts From Address by Brig. Gen. Jacob F. Wolters*

Much confusion of thought and language has been caused both in this country and in England by applying the term "martial law" indiscriminately to hostile occupation as well as domestic territory in a state of insurrection. The Duke of Wellington once made the celebrated statement in the House of Lords that "martial law is no law at all, but is simply the will of the military commander." He had confused martial law with military government. It was not until Chief Justice Chase wrote a specially concurring opinion in ex parte Milligan, 4 Wall., exact Page 141, that the proper classification of the three kinds of military jurisdiction existing in American law were clearly suggested. Chief Justice Chase said:

"There are under the constitution three kinds of military jurisdiction: One to be exercised both in peace and war; another to be exercised in time of foreign war without the boundaries of the United States, or in time of rebellion and civil war within states or districts occupied by rebels treated as belligerents; and a third to be exercised in time of invasion or insurrection within the limits of the United States or during rebellion within the limits of states maintaining adhesion to the national Government, when the public danger requires its exercise. The first of these may be called jurisdiction under military law, and is found in acts of Congress prescribing rules and articles of war, or otherwise providing for the government of the national forces; the second may be distinguished as military government, superseding, as far as may be deemed expedient, the local law, and exercised by the military commander under the discretion of the President, with the express or implied sanction of Congress; while the third may be denominated martial law proper, and is called into action by Congress, or temporarily, when the action of Congress cannot be invited, and in the case of justifying or excusing peril, by the President, in times of insurrection or invasion, or of civil or foreign war, within districts or localities where ordinary law no longer adequately secures public safety and private rights."

*Before National Guard Association at New Orleans, La.

Three Kinds of Jurisdiction

We find, then, in American law three kinds of military jurisdiction, to-wit:

1. Military law. This is the law that governs persons in the military service.

2. Military government. This is the law of hostile occupation, governing invaded territories.

3. Martial law. This relates to domestic insurrection or invasion. It is a part of our domestic or municipal law. In the national constitution it has its foundation in Section 5 of Article 4. In the State of Texas its foundation is found in Sections 7 and 10 of Article 4 of the state constitution.

In United States vs. Diekelman, 92 U. S., exact Page 526, the Supreme Court of the United States, in an opinion by Chief Justice Waite, defined martial law as follows:

"Martial law is the law of military necessity in the actual presence of war. It is administered by the general of the army, and is in fact his will. Of necessity it is arbitrary; but it must be obeyed."

Martial Law Defined

In re Ezeta, 62 Fed. 972, the court defines martial law as follows:

"Martial law is founded on paramount necessity. It is the will of the commander of the forces. In the proper sense, it is not law at all. It is merely a cessation, from necessity, of all municipal law, and what necessity requires is justified."

In United States vs. McDonal, 265 Fed. 754, the distinction between martial law and military law is declared to be as follows:

"Military is distinguished from martial law, in that it applies only to persons in the military or naval service of the Government; whereas, martial law, when once established, applies alike to citizens and soldiers."

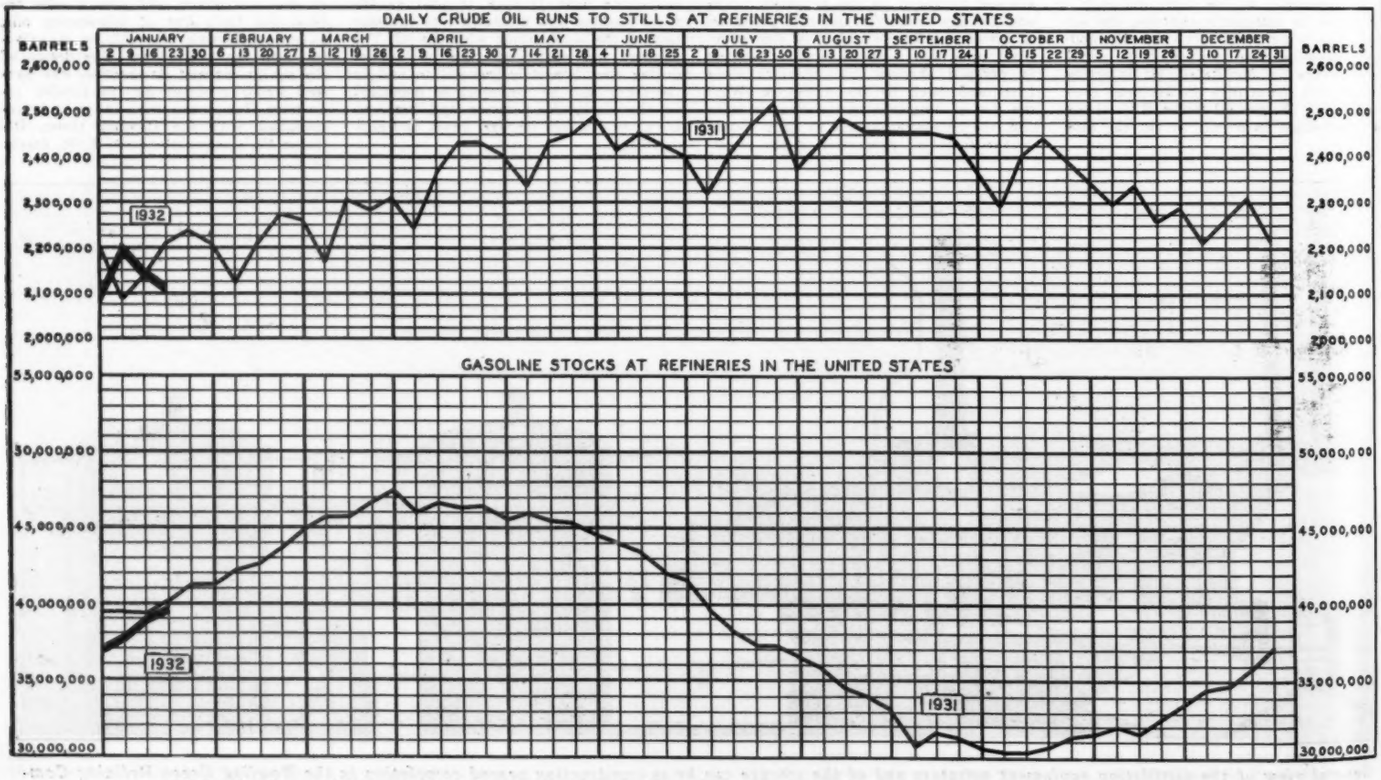
(Continued on Page 163)

AMERICAN PETROLEUM INSTITUTE WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to still, gasoline stocks and gas and fuel oil stocks in barrels—for the week ending January 23.

	Week ending January 23				Week ended January 16				Week ending January 24, 1931			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	410,400	4,891,000	7,746,000	100.0	409,900	4,937,000	7,684,000	100.0	438,700	6,476,000	8,400,000
Appalachian	91.8	84,900	1,463,000	1,395,000	91 8	84,400	1,418,000	1,450,000	93.8	83,700	1,157,000	1,046,000
Indiana, Illinois, Kentucky	98.9	250,600	4,574,000	5,152,000	98 9	264,400	4,437,000	5,235,000	97.5	248,200	4,669,000	3,003,000
Oklahoma, Kansas, Missouri	89.6	222,400	3,351,000	3,826,000	89.6	235,400	3,216,000	3,960,000	89.4	247,700	2,800,000	3,826,000
Texas	91.3	523,000	5,497,000	10,789,000	91.3	508,600	8,509,000	10,946,000	91.9	560,300	7,582,000	10,070,000
Louisiana and Arkansas	98.9	157,300	1,250,000	4,166,000	98.9	146,400	1,261,000	4,189,000	98.3	134,100	1,596,000	2,290,000
Rocky Mountain	89.4	41,100	1,746,000	726,000	89.4	43,200	1,654,000	748,000	93.1	40,400	1,700,000	854,000
California	97.1	452,400	13,966,000	96,121,000	97.1	432,600	13,776,000	96,118,000	98.8	478,600	15,515,000	102,463,000
Total United States	95.2	2,142,100	39,738,000	129,921,000	95.2	2,124,900	39,208,000	130,330,000	95.7	2,231,700	41,495,000	132,052,000
Texas Gulf Coast	91.8	401,400	6,637,000	7,987,000	99.8	403,600	6,754,000	8,204,000	100.0	436,900	6,165,000	7,626,000
Louisiana Gulf Coast	100.0	111,600	1,123,000	3,300,000	100.0	95,000	1,137,000	3,306,000	100.0	88,300	1,355,000	1,308,000

(1) Per cent refinery capacity represented. (2) Daily crude runs to stills. (3) Gasoline stocks. (4) gas and fuel oil stocks.



All data based on weekly reports of the American Petroleum Institute. Figures for last week not shown in graph but are included in above table.

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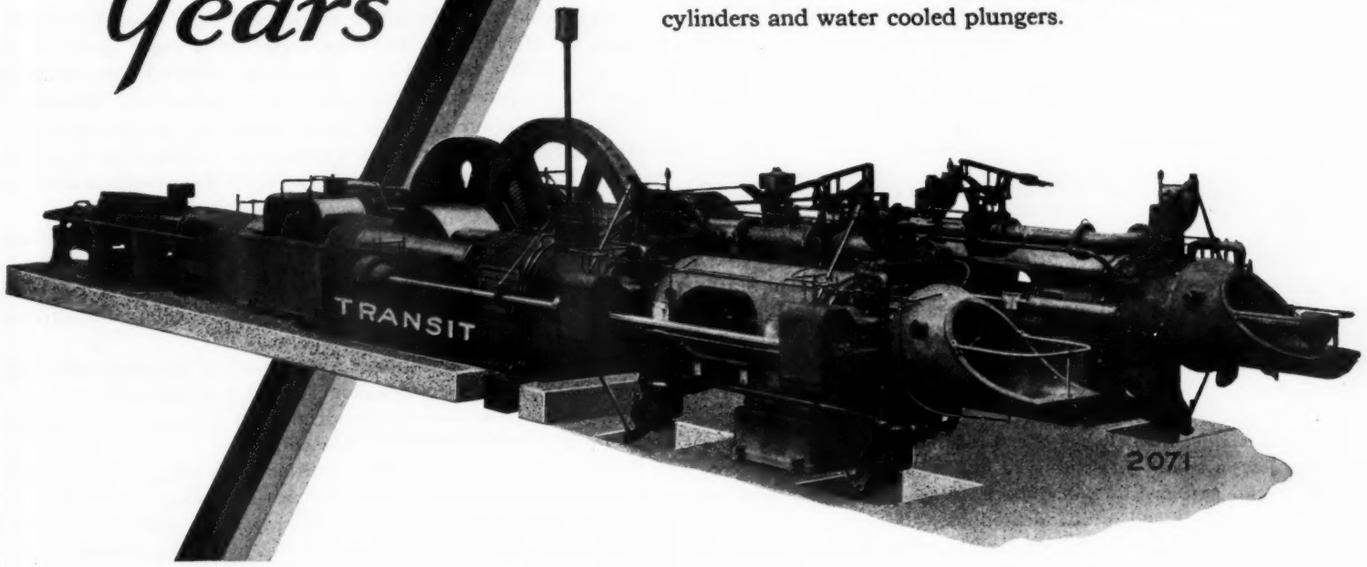

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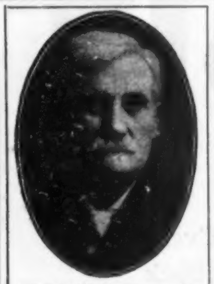

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YOU TELL THEM

Twenty cents out of every dollar of income in the United States goes to the tax collector.

Total public expenditures for all purposes, federal, state and local, amount to approximately $13,000,000,000 a year, of which $10,-250,000,000 are immediate taxes and the balance borrowings or deferred taxation.

The national debt which had been steadily decreasing since the war until now is again going upward but in the meantime the reduction of the national debt had been offset by the increase of $9,000,000,000 in state and local indebtedness.

The burden of mounting taxes, so lightly borne during the period of phenomenal prosperity is now being crushingly felt.

"The tax burden is a very serious and prominent item in cost sheets today", President E. G. Grace of the Bethlehem Steel Corporation, told the annual sales meeting. "The country is rapidly approaching, if it has not already reached, the danger line of financial stability because of the continued delirious extravagance of federal, state and municipal spending".

"Prosperity in the steel business depends in the main on good times throughout all industry. The construction, automobile, railroad, agricultural and oil industries are among our biggest customers. When they thrive, the steel business prospers. The construction and railroad industries are staggering under taxes imposed on their heavy investments, while the motor and oil businesses are threatened by proposed increases in sales taxes. Reduce the tax bill, both of the individual and of business, and you will have taken a long step towards restoring confidence".

In some states and communities mass meetings of taxpayers are being held to demand local or state tax reduction. These reflect the resentment of the individual taxpayer suddenly realizing how heavy his tax burden has become. But this personal revolt is a very short-sighted affair.

What is needed is a general recognition of the broad fact that Mr. Grace has emphasized, that the prosperity of any industry is dependent upon the prosperity of all industry, that a tax burden which handicaps one rebounds upon all others.

The complacence of the ordinary taxpayer over the imposition of new burdens upon industry and business, as if it had no reaction upon his own affairs, must be undeceived.

Taxes have a way of finding the lowest level. They seep down through increased costs of manufacture or of doing business until they reach the price paid by the ultimate consumer. They are, as Mr. Grace says, "a very serious and prominent item in cost sheets."

Just now when every industry and every business is pruning every outgo in the effort to weather the storm this fixed charge of one-fifth of the national income is all important.

Deficits in tax revenue due to the depression call for increased charges against those who can pay. Meanwhile what is being done by the tax levying bodies to apply the same diligence in pruning governmental expenditures that private business and industry is compelled to do?

Government, whether federal, state or local, should be scrutinizing every outlay, every service, to see whether it is absolutely necessary, as every business man and individual has to do.

Private business has had to cut out relentlessly hundreds of items that were added during the peak of prosperity, some that were convenient rather than essential and that can be done without in a pinch; many that were added without any particular thought for expense but which in the aggregate amount to an important and unnecessary expenditure.

This, of course, has been just as true, and more so of government, whether at Washington, the state capitol, the court house or the city hall. Every fad and frill that came along in the heyday of prosperity was put on the payroll without much or any question.

Hundreds of bureaus and departments and individual office-holders were taken on from time to time, in response to this movement or that, swelling the public payroll until it absorbed one-fifth of everybody's pay envelope.

The time has come for a thorough examination of every governmental agency and function to see whether it is absolutely necessary in a time like this. Each unnecessary expenditure is that much of an obstruction on the path to recovery because tax reduction is an essential in any return to normal living.

J. A. Emery, of the National Association of Manufacturers, told the House Ways and Means Committee what is needed:

"Abandon non-essential expenditure and above all incur no new expense that is not demonstrably essential."

This applies as much to state and local government as to Washington. Since the war, until the present emergency, the federal tax trend was downward while the state and local tax trend was upward. Now, the national debt and federal taxes are being forced upward and there is the more reason why state and local taxes should be kept down.

The taxpaying protestants who have been making their views known in several states and communities are going at the matter in the most direct way. They are impressing their opinion upon their local representatives in the tax levying and tax spending bodies.

If every taxpayer would make it his business to inform his representative in the legislature or in the city and county administrations that there must be an overhauling of public expenditures with a view to immediate economy it would get somewhere.

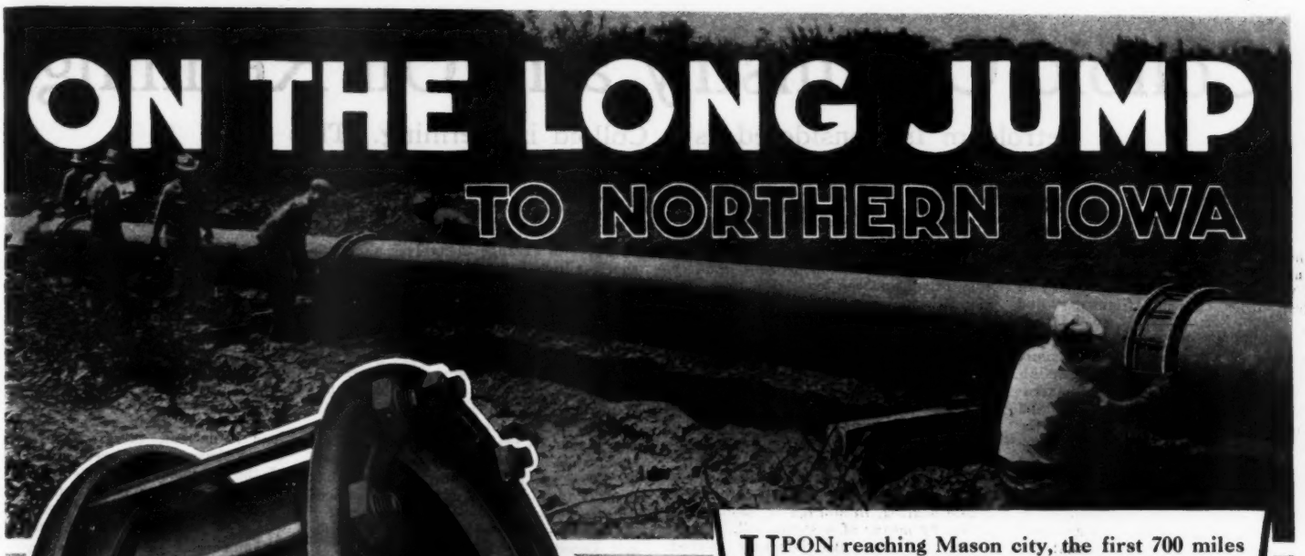
Delegations to Washington or the state capitals are all right so far as they go but the public representative will pay more attention to a flood of protests from his immediate constituents. When he is shown that they are aroused he will get into action.

The average man is too easily deterred from making an individual protest by the thought that he alone can have little influence, that only organization counts. But there are periods like the present when he had better use the time he wastes in conversational indignation among his friends in conveying that indignation directly to his official representative.

Taxation has been of minor importance to the average American during the years since the war, except perhaps just before the date of payment. When they were paid they were forgotten until the next year but the way things have changed they are not going to be taken so carelessly.

Every dollar counts nowadays and twenty cents out of every dollar is too much to give up without knowing that it is absolutely essential.

ON THE LONG JUMP TO NORTHERN IOWA



UPON reaching Mason city, the first 700 miles of Northern Natural Gas Co's. trunk-line project was completed. From Texas Panhandle into Kansas; thence across Nebraska and Iowa—Dresser Couplings facilitated the construction. Their use on this long line testifies anew to Dresser flexibility and permanent tightness.

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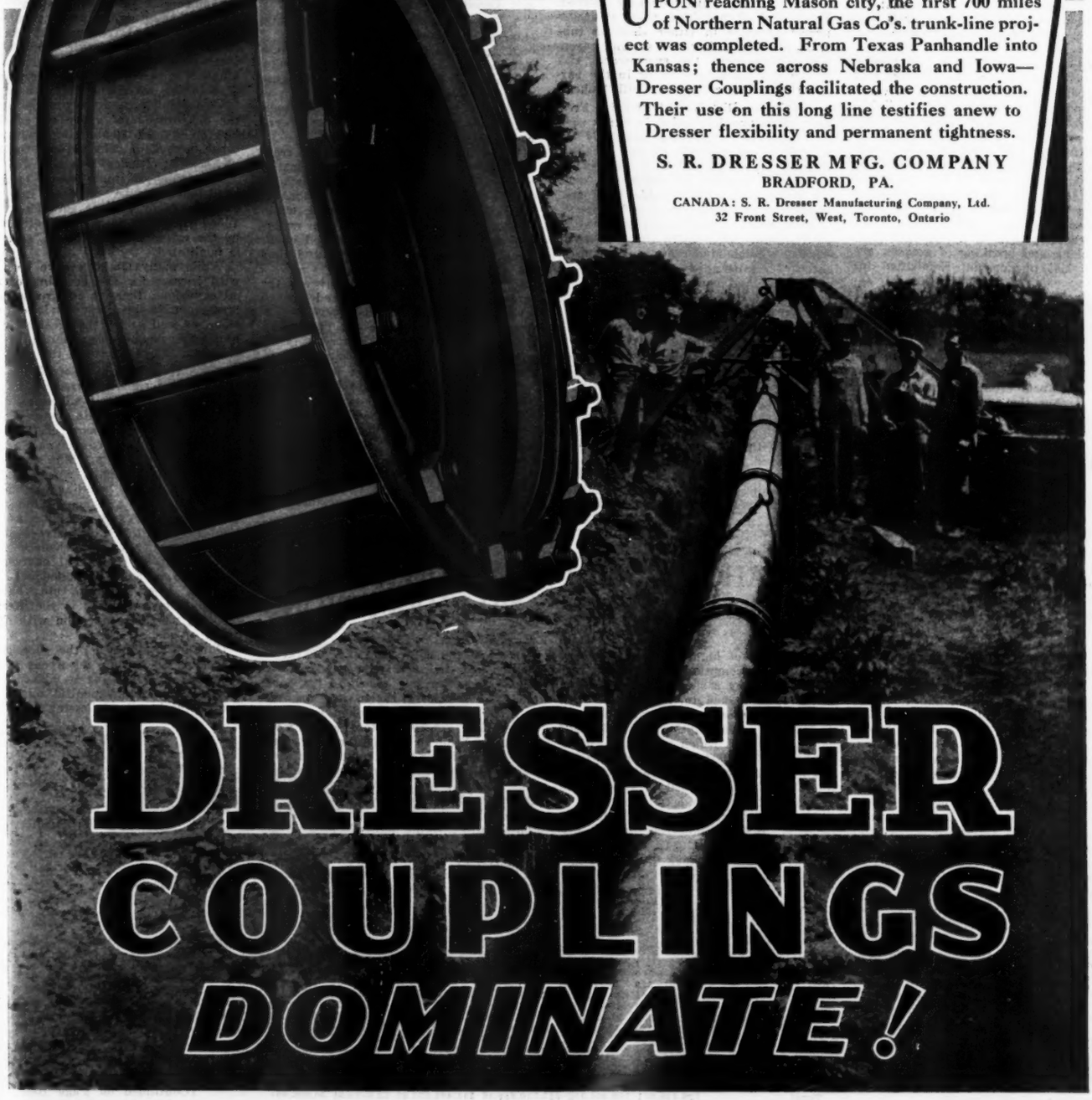

DRESSER COUPLINGS DOMINATE!

Colloid Chemistry and Oil Refining

Petroleum Is Considered as a Colloid in Refining. This Application Is Made Here to Cut Oil and Absorbing Agents

By Jacque C. Morrell and Gustav Egloff
Research Department, Universal Oil Products Co.*

Bancroft has adopted a flexible definition and classification of colloid chemistry, namely, that it is the chemistry of bubbles, drops, grains, filaments and films.

In approaching the subject of the colloid chemistry of petroleum, one must consider it in the light of a broad definition. There is no fine line of demarcation between molecular dispersions and the so-called colloidal dispersions on the one hand, and between colloidal dispersions and coarse suspensions on the other. Likewise, it is difficult in some cases to determine whether a process may be properly classified as colloidal. It is quite obvious to one with even a superficial knowledge of the subject that petroleum itself, especially the asphalt base types, is a colloidal system. One does not go very far in the refining of petroleum without recognizing that in many cases the processes as well as the products may be classified as colloidal. Oil field emulsions and asphalts are distinctly colloidal systems. The dispersion of wax in a crude oil or one of its fractions; fluorescence in lubricating oils and kerosene distillates; the removal of asphalt either by adsorption with solid adsorbents or by precipitation with sulphuric acid or other refining agents; the formation of color and gum in cracked hydrocarbon distillates; the dispersion of dyes in gasoline; the making and breaking of greases, are all colloidal phenomena. Emulsified lubricating oils, insecticidal sprays, asphalt emulsions, petroleum jellies or petrolatum (vaseline) are examples of some petroleum products having colloidal properties.

Paraffin base oils usually contain colloidally dispersed waxes, which assume crystalline form after distillation. It is probable that the action of heat during distillation changes the degree of dispersion or state of aggregation of the wax. Asphaltic base oils contain dispersed bituminous solids, probably derived from hydrocarbons by oxidation, sulphuration or condensation. Such colloidal asphalts may be reversibly precipitated, or by means of strong acid may be irreversibly coagulated.

Crude Oil Emulsions

One of the great problems of the petroleum industry is the handling of emulsified or "cut" oil. In practically every oil field, especially those producing asphaltic crudes, a considerable proportion of the crude comes to the surface in emulsion form. This emulsion may be thin and mobile, or it may be a pasty solid, practically impossible to transport by pipe line and troublesome if not impracticable to refine. Large amounts of emulsified oil have been burned as a waste product, due to the difficulty of transporting and refining it. Crude oil emulsions are still burned in some localities. Some is run into sumps. It is reported that some crude oil emulsions have been in such storage for over 20 years. It is estimated that in 1930 300,000,000 bbls. of the world's total crude oil production was produced in emulsion form, and required some form of treatment before it could be marketed.

A tremendous amount of study has been devoted to the breaking of crude oil emulsions. The major methods which have been tested in commercial practice are: (1) Settling, (2) heating or distilling at atmospheric pressure, (3) heating or distilling at elevated pressure, (4) action of electricity (electrical dehydration), (5) use of chemicals, (6) centrifuging, (7) filtration.

The method used to de-emulsify for any given oil emulsion depends upon the type of oil and the tenacity of the emulsion.

Settling—When oil containing both emulsions and free water is allowed to stand in a tank or sump, breakdown of the emulsion sometimes occurs. Usually, however, there is a separation into an oily layer, a layer containing emulsified oil, and a layer of water. The free oil is pumped from the top and passed to storage.

Heating at Atmospheric Pressure—In some cases emulsions may be broken by gentle heating, in storage or special open tanks, by means of a steam coil. This is a wasteful and unsatisfactory method. Emulsified oil may be distilled at atmospheric pressure in either shell or tube stills. This is a slow, tedious and expensive process with the ever-present risk of the still foaming over, or in the parlance of the oil refiner the still "pukes."

Heating or Distilling at Elevated Pressure—Pressure distillation in either shell or tube stills is the most generally applicable of all methods for the breaking of crude oil emulsions. It is rapid in action and eliminates the danger of foaming or puking. Very stable California emulsified crude oils have been successfully distilled under moderate pressure at a rate as high as 10 times as great as that possible under atmospheric pressure in the same apparatus. The pressure distillation and condensation of the vapors of emulsified oils at elevated temperatures can be carried out not alone to dehydrate oil but also to crack it into motor fuel.

Electric Dehydration—The use of electricity in the dehydration of emulsified oil has developed from the work of Cottrell on the electric precipitation of solid particles suspended in air or other gases, such as fog or smoke. An alternating current with a high potential difference is employed. In the application of the alternating current the field is continually reversing so that the only tendency is for the irregularly distributed globules of water to arrange themselves along the shortest lines between the electrodes. The globules form chains and gradually coalesce along these chains. The direct current method is also used in dehydrating oils.

Chemical Treatment—There are several groups of chemical reagents employed in the dehydration of crude oil emulsions. Among these the most satisfactory is the addition of substances which tend to break the protective emulsion films by their tendency to form emulsions of the opposite type from that present in the oil. Among the chemical substances which have been proposed for the breaking of emulsions, the following may be cited:

1. Dehydrating agents such as calcium chloride and quick lime.

2. Agents which presumably cause flocculation of the substances composing the protective films and thereby cause coalescence of the water droplets, such as sodium chloride, ferrous sulphate, sodium sulphate, etc. These have not proved very effective.

3. Substances which presumably react with salts or organic acids present in the external phase of the film, such as caustic soda, lime, sodium bicarbonate; for example these may react with naphthenic and other acids to form water-soluble soaps and the water-in-oil emulsions will tend to be reversed and thus broken.

4. Substances which tend to break the protective films by their tendency to form an emulsion of the opposite type from that present in the oil. This group includes iron oxides and other finely divided salts, such as clays, silica, soaps, gums, starches, albuminous matter, etc. In general these substances tend to stabilize oil-in-water emulsions and thus to break water-in-oil emulsions. The finely divided soils, when effective, probably act in the same manner, since it is well known that some finely divided solids are good emulsifying agents for oil-in-water emulsions.

5. Electrolytes, which presumably neutralize the electrical charge of the emulsified water droplets. Among these are acids such as sulphuric acid, acetic acid and salt solutions, such as ferric nitrate and ferric chloride.

6. Solvents which dissolve the material making up the protective film of the emulsion. Among such substances are carbon disulphide, carbon tetrachloride, benzol, acetone, alcohol, ether and gasoline. Besides their solvent action they tend to decrease the viscosity of the external phase and thus reduce the stability of the emulsion. In general, these solvents are used to break emulsions only on a laboratory scale for determination of the water content of the emulsion.

Commercial de-emulsifiers in general act like one or several of the groups mentioned. Chemical treatment of crude oil emulsions has been quite effective on a large scale either alone or used in combination with some of the other methods of breaking emulsions herein mentioned.

Centrifuging—Centrifuging is used in the dehydration of crude oil emulsions, but chiefly in combination with some other method of dehydration; for example, heat or chemical reagents.

Filtration—In some cases crude oil emulsions may be resolved into their components by passage through a filter. When the filter is more readily wetted by the water than by the oil, separation is facilitated.

While many methods have been used with success for the breaking of crude oil emulsions, there is still room for improvement in breaking crude oil emulsions, as well as for the breaking of bottom settlings and other emulsified materials which accumulate in the refinery.

Refining by Adsorption

Many materials are used in the refining of oils by various adsorbing agents. In general the materials are of a porous structure, the pores being of the continuous type. Various earths and minerals such as fuller's earth, china clay, kaolinite, alumina, bauxite, magnesite, iron oxide and various alkaline earth oxides such as calcium and magnesium oxides. Other materials such as bone ash, bog iron ore, Death Valley clay, bentonite, silica gel and various carbonaceous materials such as coke, coal charcoals of various types such as bone-black, wood charcoal, blood charcoal, etc., have all been used or mentioned in the literature as being used in connection with the refining of oils.

Dunstan examined the decolorizing properties of various adsorbent and decolorizing agents using a 0.25 per cent solution of crude asphaltic oil in benzene, obtaining the following results:

Material (1 gram)—	Cubic centimeters of colored solution decolorized
Alumina	60
Fuller's earth I	30
Bauxite I	30
Bauxite II	25
Bauxite III	20
Ignited peat	15
Bone charcoal	14
Bog iron ore	12
Fuller's earth II	10
Ferric oxide	10
Ball clay	8
Fuller's earth III	8.5
Fuller's earth IV	4
China clay	2
Kieselguhr	2

He states that cold bauxite which has been ignited and cooled in a vacuum desiccator was found to have lost its power of adsorption in the treatment of kerosene, but when freshly heated to 200° C. it was reactivated. Heat appears to be evolved during active adsorption; thus a 20° C. rise in temperature was observed during the passage of 100 c.c. of kerosene through 50 grams of

(Continued on Page 166)

*The two subjects discussed in this article are a part of the chapter Colloid Chemistry of Petroleum to appear in the third volume of Alexander's Colloid Chemistry.

OKLAHOMA DATA SHOW EFFECT TAX EVASION AND EXEMPTIONS

The effect of high gasoline taxes and agricultural exemptions in the total revenue derived by a state is clearly shown in the report issued during the past week covering Oklahoma collections. The report shows a consumption of 306,396,022 gallons for 1931 which compares with a total of 326,429,901 gallons for 1930.

The tax collections totaled $11,494,577 in 1931 and $11,710,656 in 1930. The 1930 collections were less than those of 1929. Agricultural exemptions jumped from 23,353,831 gallons in 1930 to 30,830,654 gallons in 1931. With practically the same activity in the agricultural sections exemptions jumped from 400,512 gallons in January, 1930, to 1,228,860 gallons in the same month of 1931. Exemptions of this character showed a decline the latter part of 1931 due to the efforts of the state tax commission. An investigation has resulted in 1,000 tractors being taken from the "free" list. These tractors which were not in condition to be used for farm work were the basis for tax exemption claims.

It is believed that the actual consumption in the State was greater in 1931 than in 1930. The decrease was due to bootlegging gasoline from small refineries and natural gasoline plants located in the State and selling it through stations without payment of the tax. The following table shows the wide variations in consumption, tax collected and agricultural exemptions:

Month—	Consumption 1930	Consumption 1931	Tax collected 1930	Tax collected 1931	Agr. exemption 1930	Agr. exemption 1931
January	26,366,813	23,049,923	$999,870.91	$863,273.61	400,512	1,228,860
February	20,154,241	23,447,601	766,652.66	841,005.94	314,467	1,478,592
March	21,631,341	23,604,831	793,938.48	769,762.39	956,264	1,658,865
April	27,015,329	24,277,046	1,001,595.59	945,376.46	1,026,857	1,324,391
May	28,299,654	21,262,426	1,049,192.60	931,229.62	994,576	1,360,150
June	26,281,712	25,650,498	951,729.71	1,085,025.26	1,574,927	2,613,232
July	31,205,807	32,491,324	1,028,009.83	1,117,406.49	4,336,244	6,887,996
August	32,071,764	28,457,721	1,097,050.26	829,188.25	4,528,788	6,251,776
September	29,446,026	27,353,206	1,029,080.11	968,656.95	3,090,372	3,162,927
October	30,149,048	27,196,403	1,047,619.46	1,100,707.26	3,045,183	2,224,327
November	27,196,403	25,138,360	972,828.71	1,108,765.41	1,863,808	1,815,504
December	26,511,762	25,466,682	973,087.85	1,074,269.61	1,222,333	824,034
Total	326,429,901	306,396,022	$11,710,656.16	$11,494,577.26	23,353,831	30,830,654

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DETROIT

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PRESIDENT BEATY IN EAST TEXAS FOR CONFERENCE ON OUTLETS

KILGORE, Tex., Jan. 26.—Amos L. Beaty, of New York, president of the American Petroleum Institute, arrived at military headquarters here Tuesday morning for a conference with oil operators who have had difficulty in recent weeks in getting pipe line connections for their wells.

This is a matter that has been under discussion for some time and has been quite a problem to the military authorities. Representatives of the pipe line companies and many small operators are expected to attend the conference.

It is said that some operators have not been able to get connections for their wells recently except by agreeing to take less than the posted price for their oil.

Pipe Line Meeting

A group of pipe line company representatives met at general headquarters at Kilgore, January 21 to discuss connections to new wells completed, and those to be completed in the near future, holding a 4½-hour meeting to iron out the difficulties which seemed apparent, and which might have caused trouble in the field had they been allowed to accumulate.

A total of 117 wells have been given connections during the past few days, and others would have received connections but for high water which is slowing up pipe line and connection work, and is responsible for some of the gathering systems being shut down. High water is no doubt responsible for more wells being unconnected at the present time than any other factor, although in some cases owners have not reported their wells and sought connections for them, consequently these producers could not be aided until they made known their lack of connections.

General Wolters will call meetings of the pipe line committee, which committee was not abandoned as first reported. There is no permanent chairman to head the committee now in force. Meetings will probably be held once each week at general headquarters, at which time newly completed wells, wells without connections and connection grievances can be discussed and remedied, if possible.

One smaller purchasing company has more connections than it desires and is trying to sell 60,000 bbls. of oil, but instead of anyone purchasing this amount, some of the major purchasers will probably take over several of the connections which are burdensome to the present purchaser. Every method seems to be put into effect by the major purchasers to prevent distress oil from being thrown on the market by some of the unconnected producers, and it is apparent they have met a situation which might have developed into a dangerous state, if they had not taken immediate action. One major company connected with 46 wells the day following the last meeting of the committee, and several other major purchasers made many connections also.

The majority of the purchasers, if not all of them, have more connections and are running more oil than they care to at the present time, but in order to prevent distress oil from being thrown on the market, causing another reign of chaotic conditions in the district, they are taking more connections.

Production and Distribution

There were 3,874 completed wells in the district as of 7 a.m. January 21 and 3,697 of these reported 366,997 bbls. production for the 24 hours ending at that time. Distribution surmounted production by almost 30,000 bbls., total distribution for the same period totaling 396,390 bbls. On January 20 distribution from the district was 400,755 bbls., while the district produced only 372,497 bbls., 28,258 bbls. less than the pipe line runs, tank car shipments and runs to refineries. This excess of distribution over production was perhaps due to some of the gathering systems starting up after several days shutdown, especially the Magnolia Pipe Line Co., which had shut down its gathering system in the Gladewater-Lathrop area for several days because of high water. There are many wells in the field which have not been producing because of being covered by water.

The question was brought up whether the wells which have been shut in for lack of connections, or those standing under water and not producing, should be allowed to make up their allowable. One purchaser suggested these wells be allowed to make up this production at a later date, say the first of March, or when consumption begins to pick up throughout the country, and the demand for crude becomes heavier. The wells would then be given an extra allowable of 35 bbls. per day until they make up for the time they were shut down, or were without connections. This method of making up the allowable would no doubt be far better, and prevent glutting the market at the present time when the market could not withstand much more production without being dangerously weakened. If the wells were allowed to produce an extra 100 bbls. per day each until they had made up their loss, it would throw several thousand barrels of oil upon the East Texas market at a critical time.

There was no action taken upon this suggestion, but the problem will be discussed at a later date, and some method arrived at whereby these wells may be given a chance to make up for the days shut in.

High Spots in Field News

NORTH LOUISIANA, ARKANSAS, MISSISSIPPI

Arkansas and Mississippi more active. Four wildcats planned. Two good wells completed in Jackson gas field.

KANSAS

Snow and mud slow Kansas Fields, production dropping to 97,000 bbls. daily. Conservation law taken into court.

OKLAHOMA

Oklahoma production hits lower level as demand continues downward. Producers in stripper areas ask that lid be lifted.

CALIFORNIA

Referendum on Sharkey Conservation Bill called by Governor Rolph for May. Curtailment program being weakened.

GULF COAST

Two new sands on Gulf Coast, shallow one at Lost Lake and deep one at Sweet Lake. Two good wells at Barbers Hill.

SOUTHWEST TEXAS

Test in Kerr County disappointing, bailing 60 per cent oil and 40 per cent water but will case to bottom and drill deeper.

ROCKY MOUNTAIN AREA

Probable new gas field on Craig Dome, Colorado. Hobbs Pool allowable reduced equal to one day shutdown. Test on Hogback Dome.

WEST TEXAS

Five completions in West Texas. First location staked in Pecos County in three years. Four locations each in North Texas and Panhandle areas.

EAST TEXAS

There were 86 new locations and 89 completions during the week, high water handicapping operations. Declining average production in Gregg County.

Late Fields

WEST TEXAS

FORT WORTH, Tex., Jan. 26.—At Yates Pool hearing at Dallas today no change was made in method of proration as reported there might be. Bottom hole pressure was announced as off only 21 pounds since last year making pressure around 598 pounds at the present time.

KANSAS

Hilligoss and others' No. 1 Isern, SW cor. SE NE, Section 12-20-11w, Barton County, which was completed some time ago in the Siliceous lime at 3,313-41 feet, made a potential production test. The well flowed 66 bbls. the first hour and 56 bbls. the second hour, and was shut in.

Derby Oil Co.'s No. 1 Berscheidt, in Section 12-20-11w, the second well completed in the Isern area, was drilled deeper to a total depth of 3,352 feet, where it was showing water. The test will be plugged back to 3,329 feet. The top of the Siliceous lime was found at 3,289 feet.

Imo Oil & Gas Co.'s No. 1 Lehman, in Section 35-22-2w, Harvey County, made 65 bbls. of oil in nine hours and the gas was estimated at 4,000,000 feet a day.

New completions in Greenwood County include Theta Oil Co.'s No. 10 Frankhouser, in Section 23-22-12, made 35 bbls. of oil a day from the Bartlesville sand at 1,683-98 feet. Phillips Petroleum Co. and others' No. 3 Edwards, in Section 35-23-11, made 10 bbls. of oil the first day from sand at 1,866-84 feet.

New locations in Butler County were Skaer & Skaer and others' No. 1 Holloway, SE cor. SW NE, Section 24-27-4, and No. 4 Holloway, NE cor. SE, Section 24-27-4. These tests are located in the Osage lime pool, a short distance northeast of the Augusta city limits.

Syndicate Oil & Gas Co.'s No. 3 Becker, NW cor., Section 36-19-2w, found oil in the Viola lime at 3,398 feet, where oil rose 1,500 feet in the hole in 40 minutes. Same company's No. 4 Becker, SW cor. NW NW, Section 35-19-2w, reached the Viola lime a few hours later at 3,395 feet, where oil rose several hundred feet. Five-inch casing is being landed at both tests on the top of the Viola lime.

Midwest Refining Co.'s No. 1 Berscheidt, C NW SE, Section 12-20-11w, cored the Siliceous lime at 3,294-3,304 feet, where a showing of oil was found. The 8-inch casing was cemented at 3,293 feet.

Six new operations were reported in Kansas for the week ending January 23, three in Sedgwick County, two in Cowley County and one in Ellsworth County. Because of expiring leases the Continental Oil Co. is compelled to drill a number of tests in the Goodrich Pool, in Sedgwick County.

OKLAHOMA

The daily average pipe line shipments from the Oklahoma City Field for the last 11 days of January, were reduced to 92,347 bbls. a day, by the umpire's committee after a meeting held Saturday, January 23. The total amount of crude oil allowed during the month of January was 4,098,474 bbls. and the committee has announced that only 72 per cent of this amount can be produced or 2,935,566 bbls.

The total amount of pipe line shipments to January 21, were 1,949,267 bbls. leaving a balance of 986,289 bbls. for the last 11 days of the month.

The umpire's committee has reallocated the shipments of oil from the leases to companies, and has provided connections for every lease which is even with proration, or has oil yet to produce, during the month. The plan has been agreed upon by the purchasing companies and many of the producers.

Under the new allocation the companies' nominations are as follows:

Company—	Bbls. per day
Empire	17,940
Stanolind	22,807
Oklahoma	13,795
Continental	7,060
Magnolia	10,782
Sinclair	4,548
Tidal	242
Wilcox	914
Champlin	3,060
Canadian	512
Operators	515
Century	611
Globe	5,000
Prairie	1,705
Shell	3,172
White Oak	1,088
Peacock	915
Standish	1,823
Petroleum Pipe Line	3,790
Total	100,326

The flush fields of Oklahoma are still under military control, with Lieut. Col. Cicero I. Murray in charge, but there are troops in the Oklahoma City Field only.

Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Corp.'s No. 6 Preston-Culp, NW cor. NE, Section 6-5-9w, in the Cement Field, of Caddo County, is being completed as a gas well. It is making 10,000,000 feet of gas and 500 bbls. of water a day, from sand at 6,040-80 feet. It was the deepest test ever drilled in the United States, and was plugged back from a total depth of 10,079½ feet.

Carter Oil Co. and others' No. 1 Monnett, SW cor., Section 35-7-4, in southern Pottawatomie County, flowed and swabbed 830 bbls. of oil in 22 hours from the Simpson sand at 4,230-60 feet. Same operators announced a new location for No. 1 in the SW cor. NE, Section 35-7-4, a half mile northeast of the discovery well.

In the Fish Pool, in Seminole County, Empire Oil & Refining Co.'s No. 2 Fish, in Section 19-7-8, was completed for 1,404 bbls. of oil in 24 hours from the pay horizon at 2,926-3,035 feet. Burke-Greis Oil Co.'s No. 1 Davis, in Section 20-7-8, flowed 1,737 bbls. of oil in 24 hours, from the pay at 3,016-45 feet. It was showing water, making 60 bbls. in 24 hours.

ROY E. DEARING DIES

Roy E. Dearing, 42, Dallas, Tex., member of the firm of Dearing & Sons, drilling contractors, died at St. Paul Hospital in Dallas on January 18.

Rusk County Gas Well 60,000,000 Feet

Interesting Tests in Upshur County. New Locations Number 86 and Completions 89. Two Hundred Wells on Pump

By L. E. Bredberg

DALLAS, Tex., Jan. 25.—Peyton Brothers' No. 1 Perry in the southern extension area of the Joiner Field, Rusk County, pulled another surprise this week when it gauged almost 60,000,000 feet of dry gas upon its completion. The highest estimate formerly made on the well placed it around 8,000,000 to 10,000,000 feet per day. It is understood that another producing company has contracted for the gas and will use it for production purposes.

This is the first well in the field to produce dry gas, and no one seems willing to advance a theory as to the probable cause of no oil coming with the gas, and this quantity of gas being found in the well, all other wells in the field running low on gas pressure. Finding this quantity of gas in a well in the field may change various opinions set up in regard to pressures, ultimate recovery, and other factors pertaining to producing wells and production in this district. It is another paradox for the field, in which many have been found since its inception.

Total depth of the hole is 3,718 feet. Former estimates were made of the well before it was completely cleaned, and before leaky connections had been replaced.

The Stanolind Oil & Gas Co. is drilling a test 3,800 feet southwest of the Perry gas well, on the Ross Lacy farm in the same survey. This test is drilling at 3,460 feet after topping the Austin chalk around 3,445 feet, which throws it between 20 and 30 feet lower than the gas well. Sand in the Perry gasser was topped at 3,687 feet. The Stanolind test will be watched closely for indications of making an oil producer, or proving another dry gasser like the Perry well. Some geologists are of opinion that the sand found in the Perry gasser is a stray sand pushing up against the shore line from the south, as considerable gas is found in Shelby County, the adjacent county to the southeast. Another producer in the immediate area will perhaps give more details and help in working out a solution as to this newly found situation.

Upshur County Test

Cranfill & Reynolds drilled plug on their No. 1 Milton Rash in the E. N. Eubanks Survey, north of production, in Upshur County, and will make test during latter part of week. Liner was set and tubing has been run, and the well ready for test. It is now shut down awaiting orders.

The test made a good showing of oil in the fore part of November, 1931, but has been shut down since, interest never having lagged during that interim, many operators continuing to watch the test closely to see what the outcome will prove, whether it is to extend production 3½ miles farther north, or prove a northern marker to the field. Top of the heaviest sand was logged at 3,706 feet. Total depth of the hole is 3,728 feet. One peculiar feature about the oil found in the hole was its testing almost 5 degrees lower than the oil produced in the main body of the field, or 35 degrees gravity. Bottom of the hole is minus 3,399 feet, or 79 feet below the water level of the field, and the well was making no water when casing was cemented in November, which makes for another peculiar situation in the test.

Three other interesting tests in this county are Dunnigan and others' No. 1 Guest in the B. Parker Survey, which is drilling ahead at 2,885 feet, topping the Pecan Gap chalk at 2,467 feet; Love and others' No. 1 Bain in the W. H. Williams Survey, which is shut down at 3,740 feet, bottom of the hole standing at minus 3,370 feet; and Stanolind Oil & Gas Co.'s No. 1 Newsom in the Calvin Anderson Survey. This test is drilling below 3,240 feet.

Lathrop Area

Ryan and Hobson's No. 1 Mattox in the Dolores Sanches Survey, on the extreme eastern edge of the Lathrop area, Gregg County, was completed this week for an initial production of 100 bbls. in one hour through 1¼-inch choke against 150 pounds pressure. Top of the sand was cored at 3,605 feet, and total depth is 3,635 feet. This proves acreage on the eastern edge of the field, which might have been considered dry heretofore, sand on this edge proving irregular and doubtful.

Gulf Production Co. temporarily abandoned its No. 2 Morris in the W. R. Cooke Survey, west of the Kilgore producing area, northwestern Rusk County, at a total depth of 3,666 feet. Sand was logged at 3,642 feet.

C. L. Archer's No. 1 McDaniel in the E. Thompson Survey, near Overton in western Rusk County, was abandoned at a total depth of 3,850 feet, another western edge marker in this area.

Eighty-six Locations

There were 86 locations staked in the district this week, two more than were staked last week. Thirty-seven of the new first reports were for northern Gregg County, which continues to be the most active area. Thirty-three of the 89 completions were reported in North Gregg County. Locations are being staked and wells are being drilled and completed regardless of high water and almost impassable roads throughout the fields, but high waters have given considerable trouble to the companies connecting with the wells, and several wells in the field have been unconnected on account of this reason, although the purchasing companies are making every effort to connect with the newly completed wells.

Pipe line runs from the district showed a gain for the week ending January 20, over the week ending January 13, this gain amounting to approximately 26,000 bbls. per day, while production was less for the same period, the increased runs coming from storage in the field, adding a confirming note to a healthy condition of the market in the district, although the companies state they have more connections and are running more oil than they care to at this time.

The district produced 368,837 bbls. for the 24 hours ending at 7 a.m. January 24, from 3,904 wells, and for the same length of time ending January 23, produced 371,896 bbls. from 3,892 wells. Pipe line runs for January 23 were 343,916 bbls., or almost 28,000 bbls. less than production for that day. Distribution has been erratic in the district, probably due to high waters causing some of the gathering systems to be shut down temporarily.

Wells on Pump

There are approximately 200 wells on the pump, standing dead, or having to be agitated by swabbing or pumping in order to make them flow their daily allowable, and there have been 50 wells completed in the field which have made water at some time or another, 30 of these wells having been plugged back to shut off the water. Many of these plugging back jobs have resulted in a complete shutoff, as in Continental Oil Co.'s No. 4 Crews on the western Gregg County edge, south of Gladewater, while plugging back of others has cut down the water to negligible amount. The Continental well was plugged back twice, a total of 6½ feet to shut off the water, and the well is now making its daily allowable of 100 bbls. without any water. Total depth of this well was 3,674½ feet. More wells are showing up on pumping reports, but not at a rapid rate, and with over 3,900 wells completed in the field, 200 pumpers is a small percentage for the field, which is now almost 16 months old. Wells showing water are also increasing at a very slow rate, companies and operators taking due precautions to prevent drilling too deep and penetrating the water stratum.

DAILY AVERAGE SHIPMENTS FROM EAST TEXAS

Week Ending January 18

Shipments Through Main Trunk Lines

Company, size, location—	Amount
Arkansas P. L., 8-in., Shreveport	10,507
Atlantic P. L., 10-in., Atreco	18,352
Atlas P. L., 8-in., Shreveport	5,138
Gulf P. L., 2-8-in., Oklahoma	18,164
Gulf P. L., 2-8-in., Port Arthur	12,730
Humble P. L., 2-10-in., Shreveport	48,334
Humble P. L., 2-8-in., Todd	27,328
Liberty P. L., 8-in., Rusk	2,302
Magnolia P. L., 12-in., Corsicana	37,925
Shell P. L., 10-in., Houston	16,704
Sinclair Texas P. L., 12-in., Teague	22,422
Sun-Yount Lee P. L., 10-in., Sun City	21,905
Texas P. L., 10-in., Douglass	17,363
Texas Empire P. L., 12-in., Port Arthur	52,992
Tidal Ref., 6-in., Carthage	5,180
Total	317,346

Shipments to Refineries

Arow Refining, Overton	S.D.
Beacon Refining, Henderson	400
Boone Refining, Arp	297
Central Refining, Friars Switch	S.D.
Constantin Refining, Overton	S.D.
Diamond Refining, Overton	400
East Texas Refining, Longview	5,619
East Texas Refining, Friars Switch	4,036
Gladetex Refining, Gladewater	100
Gladewater Refining, Gladewater	265
Kilgore Refining, Kilgore	285
W. B. Mackey Refining, Gladewater	450
Overton Refining, Overton	1,300
Petroleum Refractionating, Longview	S.D.
Sinclair Oil & Gas, Longview	1,442
Slack Refining, Camp Switch	S.D.
Southern Oil Refining, Reed Switch	400
Taylor Refining, Tyler	1,429
Total	16,423

Shipments by Tank Car

East Texas Refining from Longview	421
Tidal Refining from Camp Switch	675
Tyler Pipe Line from Tyler	591
Total	1,697
Total daily average distribution	335,466
Total daily average production	352,781

Bottom Hole Pressures

One of the major companies' engineers has made up a map showing the relative bottom hole pressures in the various areas of the field, this map showing the average bottom hole pressure on the eastern side of the field to be 1,100 feet while the lowest pressure area in the field, on the eastern edge of the Joiner Pool, Rusk County, is down to 1,000 pounds. The highest pressure in the field is 1,500 pounds. This pressure extends along the western side of the field, and is maintained by the water pressure. Average pressure over the entire field is approximately 1,420-50 pounds, the area between the Lathrop discovery well and Gladewater maintaining the most uniform pressure. This is the widest part of the field, extending almost 9 miles from east to west, while other areas in the district narrow down to 3 miles at Kilgore and 5½ miles in the Joiner area.

Pure Oil Co.'s No. 1-T Davis, the Trinity test being drilled in the north end of the Van Pool, Van Zandt County, is fishing at 6,482 feet. There are other wells drilling in the field, and one new location staked this week.

Georgetown Lime Wells

The attached sheets show wells which have topped or drilled into the Georgetown lime on the eastern edge of the producing area in the district, the ma-

(Continued on Page 146)

EAST CENTRAL TEXAS WILDCATS

Week Ending January 25

ANDERSON COUNTY

Company, well, farm name, section and block—	Remarks:
C. R. Wilmuth et al's No. 1 N. B. Watson, 500 ft. from W line and 4,850 ft. from N of S line of survey in 5½ of 129-ac. tract, M. Main Sur.	Drlg. 1,300 ft.

BOWIE COUNTY

Logan and Elliott's No. 1 J. W. Smith, 9,600 ft. S and 2,500 ft. W of NE cor. of survey, Chas. Lewis Sur.	S.D. 4,503 ft.
W. S. Langford's No. 1 W. W. Whybark, 200 ft. from S and W of SW cor. of J. A. Dyer Sur.	S.D. 1,880 ft.
Lee Timberlake et al's No. 2 Julius N. Tidwell, 655 ft. from E and 2,510 ft. from S of survey in L. M. Rice Sur.	S.W. on D.S. test; S.D. 3,012 ft.

CHEROKEE COUNTY

Bridges and Candler's No. 1 Berryman, center of Berryman tract, H. Kimble Sur.	S.D. 1,000 ft.
Denman et al's No. 1 Mrs. Renfroe, 330 ft. N of S line and 330 ft. E of W line of farm, Uriah Moore Sur.	Derrick.
Harper and Perkinson's No. 1 J. T. Lowery, 650 ft. from N line, 150 ft. from W line of Blk. No. 5 on a 139.6-ac. tract, 4 miles W of Troupe, C. B. Jennings Sur.	Rigging up.
Merry Bros. and Perini's No. 1 Annie Kelley, 330 ft. from N line and 443 ft. from E line of 393-ac. tract and 90-ac. lease, M. De Los Santos Coy Sur.	Location.
Wilson & Stubbs' No. 1 L. Robart, 450 ft. from S and 150 ft. from W of lease, J. B. Wolfin Sur.	S.D. 2,035 ft.

DALLAS COUNTY

Long Creek Dev. Co.'s No. 1 T. J. Lupton, center of 160-ac. tract, 3½ miles N of Mesquite, J. Johnson Sur.	Derrick pattern.
Paris' No. 2 Wilkinson, 2,787 ft. from NW and 3,241 ft. from SW of John P. Anderson Sur.	T.D. 1,230 ft; S.D.
Joe Wilson's No. 1 fee, 600 ft. from N line and 600 ft. from W line of 1,500-ac. tr., Jno. Scroggs Sur.	S.D. 1,150 ft.

DELTA COUNTY

Worthington et al's No. 1 Pejernett, 776 ft. from S and 150 ft. from W in E. Chick Sur., 1½ miles W of Horton	S.D. 3,315 ft.

ELLIS COUNTY

Clark Brooks' No. 1 C. W. Golliday, 300 ft. from S line and 300 ft. from E line of tract and survey, John Bones Sur.	Underreaming 6¾-in. csg.; T.D. 1,800 ft.
E. M. Roger's No. 1 John Lee Winn, 1,650 ft. from E and 150 ft. from S of Orland, Orlo Wheeler Sur.	S.D. 1,425 ft.
Worthen Pet. Co.'s No. 1 Cerf, 2½ miles NE of Ennis.	T.D. 2,264 ft.

FRANKLIN COUNTY

Tom Harper's No. 1 fee, 150 ft. from N line and 200 ft. from E line of 116-ac. tr., W. M. Dawson Sur.	Derrick.

(Continued on Page 150)

New Locations in Western Pecos County

West Texas Stocks Being Decreased. Increased Takings in Cook Pool and Coleman County. Four Locations in Panhandle

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Jan. 25.—There were five completions registered in West Texas this week, three being recompleted wells, one in Howard County, one in Winkler County and one in Ward. The latter was Stanolind Oil & Gas Co.'s No. 1 Brown which was drilled from a former total depth of 2,559 feet to 2,762 feet and plugged back to 2,390 feet before being completed for an initial of 17 bbls. per day, gas decreasing to approximately 2,000,000 feet per day.

Young and Donnelly's No. 1 Shannon in Section 42, Block BB, T.C. Survey, in the World Pool, Crockett County, has been deepened to total depth of 2,604 feet and pumped 40 bbls. oil the first 24 hours. An increase in oil was logged at 2,596 feet. Former total depth was 2,556 feet, and the well was making only 10 bbls. of oil daily with 100 bbls. water before deepening.

Harrison's No. 1 Denman in Section 10, Township 1s, Block 30, T.&P. Survey, eastern Howard County, appears as another small producer for this area which is of little consequence so far. The test topped the pay at 2,735 feet and is now shut down at 2,737 feet making one bailer of oil per hour.

Reagan County

Group No. 1 Oil Corp. and Continental Oil Co.'s No. 1-B University, the deep discovery well of the Big Lake Field, Reagan County, which has been worked over and deepened from its former total depth of 8,525 feet, is now shut down at 8,596 feet waiting on cement to set, and for connecting up the well. No. 2-B of the same company is preparing to run casing. No. 3-B has drill pipe stuck while being run to deepen from its present total depth of 8,970 feet, the deepest well of the field.

There were three locations staked in the Permian Basin during the week, one in Ward, one in Val Verde and one in Pecos County. The location staked in Pecos County is the first to be staked in that county for over three years, and is located on the western side of the county.

Stanolind Oil Through Humble

An interesting feature in the district is the moving of oil from storage in the Winkler County Field by the Stanolind Oil & Gas Co., through Humble Pipe Line Co.'s lines to Ranger thence to Mexia where the oil is transferred to the Stanolind Pipe Line Co.'s main line which runs south to the Gulf from this point and north to Oklahoma. The Winkler County crude will be run north to Healdton, Okla., thence to Whiting, Ind. The company has been shipping out oil from this area by tank car heretofore, shipping 105,000 bbls. by this method in December.

West Texas stocks were decreased at the rate of around 450,000 bbls. per month during November and December, leaving approximately 24,309,200 bbls. of empty storage in the district. Total storage capacity in the basin is a little over 50,000,000 bbls. The Stanolind Oil & Gas Co.'s recent move to ship out oil through the Humble line will cause another drop in storage in the district, this company having in the neighborhood of 4,500,000 bbls. in storage in Winkler County, which will now be moved north.

The Atlantic Oil Producing Co. has almost 4,521,890 bbls. in storage in the district, Magnolia has 3,526,670 bbls. and the Gulf Production Co., 5,120,000 bbls. capacity and 3,473,770 bbls. in storage. Winkler County contains the most oil in storage of any of the West Texas counties, a total of 7,483,200 bbls. The large tank farms at Midland, which contain a large amount of Winkler and Crane County storage, have 5,366,850 bbls. in storage.

Ector County

Weekly Oil Corp., Casteel and McCurdy's No. 1 Cowden in Ector County, continues to be the most interesting test in the basin. It is now running 8-inch casing to 3,200 feet where it will be cemented. Tools have been fished out and the gas has shown considerable increase since they were removed and the hole cleaned. Total depth is 3,798 feet. Gas was struck at 3,795 feet. Many are considering the well as sure to make a producer, and to open up a new pool for the county. However, other tests in the county have also encountered good gas showings and failed to make oil producers, and this may prove to be similar to those tests in that respect.

Daily average oil shipments from West Texas for the week ending January 14, follows:

Shipments Through Main Trunk Lines

Company, size and location—	Bbls.
Atlantic P. L. Co., 10-in., Houston	20,954
Gulf P. L. Co., 10-in., Ranger	28,545
Humble P. L. Co., 2-8-in., San Angelo	20,132
Humble P. L. Co., 12-in., Comyn	49,761
Illinois P. L. Co., 2-8-in., Del Rio	19,871
Magnolia P. L. Co., 8-in., De Leon	None
Shell P. L. Corp., 10-in., Houston	22,505
Shell P. L. Corp., 10-in., Cushing, Okla.	36,849
Texas P. L. Co., 12-in., Houston	15,146
Total	213,763

Shipments by Tank Car

Fox and Thorsen, from Mertzon	30
Total	30
Total shipments to refineries	23,838
Daily average distribution	237,631
Daily average from storage	31,972
Daily average production for West Texas (incl. Lea County, N. M.)	205,659

RANGER AND WICHITA FALLS

The Prairie Oil & Gas Co. and Amerada Petroleum Corp.'s No. 1 Ritchie in C.T. R.R. Survey, Abstract 140, Palo Pinto County, which topped the Edgin sand last week and swabbed 65 bbls. in 12 hours after shutting down at total depth of 1,704 feet to run tubing is still waiting on connections. The Prairie Pipe Line Co. which is taking oil from producers 1½ miles to the northeast will connect with this well. The wells in this area are allowed to produce only 10 bbls. per day. The companies have staked another location in this area, on the Bridges farm in the W. Metcalf Survey No. 1,188.

A. C. Walker's No. 1 Hill is another shallow pool opener near the town of Albany in Shackelford County, producing 12 bbls. per day from the 700-foot pay which spots the area around this town. It is approximately 2 miles south of the town, in Section 38, Blind Asylum Lands.

The Humble Oil & Refining Co. has increased its takings in the Cook Pool, western Shackelford County, from 4 to 10 bbls. per well per day, which will be of great benefit to this pool and the producers in it. Continental Oil Co., Roeser & Pendleton, Inc. and the Humble Oil & Refining Co. are the three producers in the area. Roeser & Pendleton shut in their wells for three months during the middle of 1931, but they have all been on production since that time, prorated to 4 bbls. each per day.

The Humble Oil & Refining Co. also connected to 183 shallow wells north of Burkett in Coleman County, these wells having an estimated 500 bbls. potential per day. The wells have been shut in for over a year, and the connection by the Humble company may be considered as exceptionally significant.

There was one location staked in Coleman County, one in Brown and two in Palo Pinto County during the week. There were five completions reported in the Ranger district, one in Shackelford, two in Coleman and two in Brown County.

Knox' No. 1 Manning in Lot 7, Abstract 1,232, T.&L. Survey, north Young County, which topped the Strawn sand last week at 2,749 feet and was shut down at 2,758 feet estimated good for 250 bbls. per day, is still shut in waiting on pipe line connections. This well opens up a new pool for this county.

PANHANDLE DISTRICT

There were four completions in this district during the week, three in Gray and one in Hutchinson County. There were four locations staked, two in Gray, one in Hutchinson and one in Moore County.

Gray County

Mid-Kansas Oil & Gas Co.'s No. 1 Carpenter, top pay 2,208-18 feet, initial production 41,000,000 feet of gas, total depth 2,218 feet.

Prairie Oil & Gas Co.'s No. 1 Morse,

(Continued on Page 146)

WILDCAT OPERATIONS IN WEST TEXAS

Week Ending January 25

ANDREWS COUNTY

Company, well, farm name, section and block—	Remarks:
Fuhrman Pet. Co.'s No. 1 Boner, 1,320 ft. from N and 440 ft. from W Sec. 24, Blk. A-43, P.S.L.	Rig.

BREWSTER COUNTY

Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor. Sec. 45, Blk. G-15, G.C.&S.F. Sur.	S.D. 1,935 ft.
E. L. Chapman's No. 1 Skinner, C SW SE Sec. 100, Blk. 2, G.C.&S.F. Sur.	S.D. 1,302 ft.
Trans-Pecos Oil & Gas Co.'s No. 1 Jones, 930 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.& S.F. Sur.	S.D. 2,900 ft.
Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 miles south Alpine	S.D. 1,750 ft.

COCHRAN COUNTY

Penn Oil Co.'s No. 1 Slaughter, C Labour No. 80 of League 129, Carson County School Lands	S.D. 5,002 ft.

CONCHO COUNTY

Beesley et al's No. 1 Waring Estate, 400 ft. from N and E Sec. 163, T.&N.O. Sur.	Rig up; National machine.
Turner et al's No. 1 Borsig, 150 ft. from S of NE cor. G. Emmig Sur. 130, 6 miles W of Paint Rock	S.D. 1,850 ft.

CROCKETT COUNTY

Doleman & Moore's No. 1 Ferner, 2,135 ft. from N and 1,485 ft. from E of Sec. 36, Blk. 2, I.&G.N. Sur.	Spudded and S.D.

CULBERSON COUNTY

Harris-Hann's No. 1 Seay, 1,980 ft. from N and E of Sec. 16, Blk. 54, P.S.L.	Location.
Kornrumpf et al's No. 1 Garen, 330 ft. S and W, Sec. 15, Blk. 79, Public School Land	S.D. 1,280 ft.

DAWSON COUNTY

Albaugh et al's No. 1 Robinson, C NW Sec. 46, Blk. M, E.L.&R.R. Sur.	To resume drilling.

ECTOR COUNTY

Weekly Oil Corp. et al's No. 1 Cowden, 1,980 ft. from N and W Sec. 33, Blk. 43, Twp. 2s, T.&P. Sur.	Est. 500,000 ft. gas 3,795 ft.; increase 3,797 ft.; fishing 3,813 ft.
H. F. Wurts' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW, Sec. 16, Blk. 46, Twp. 3s, G.M. M.Br.&A. Sur.	S.D. 3,280 ft.

EL PASO COUNTY

Tri-State Oil Co.'s No. 1 Bobadella, 1,325 ft. from S and E lines Sur. 254, S.F. No. 7,247	S.D. 1,960 ft.

(Continued on Page 149)

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending January 25

CARSON COUNTY

Company, well, farm name, section and block—	Remarks:
Continental Oil Co.'s No. 4 Block, 330 ft. from N, 990 ft. from E, Sec. 111, Blk. 4, I.&G.N. Sur.	Bldg. rig.
H. A. M. Oil Co.'s No. 2 Cooper, 330 ft. from S and E, Sec. 5, Blk. 9, I.&G.N. Sur.	Location.
Texhoma Natural Gas Co.'s No. 1 Burnett, C NE, Sec. 54, Blk. 4, I.&G.N. Sur.	Sidetracking tools 865 ft.
Texhoma Natural Gas Co.'s No. 1-G Gore, 1,330 ft. from S and 1,327 ft. from W, Sec. 42, Blk. 4, I.&G.N. Sur.	Rig.

CHILDRESS COUNTY

C. L. Sloan et al's No. 1 B. P. Smith, Sec. 49, F. P. Knott lands	T.D. 5,000 ft.

COLLINGSWORTH COUNTY

Dixon et al's No. 1 Bell, 330 ft. N, 1,320 ft. W, Sec. 102, Blk. 21, H.&G.N. Sur.	S.D. 2,508 ft.
Downey et al's No. 1 Beasly, SE cor. SW SE, Sec. 95, Blk. 15, H.&G.N. Sur.	Rigging up.

DEAF SMITH COUNTY

Western Union Oil Co.'s No. 1 Farwell, C NW, Sec. 18-3n-2e	Drlg. 275 ft.

GRAY COUNTY

Back & Barber's No. 1 Back, 660 ft. from S and 330 ft. from W, Sec. 140, Blk. 25, H.&G.N. Sur.	S.D. 1,350 ft.
Boyes et al's No. 1 Colebank-Morse, 330 ft. NE, Sec. 65, Blk. 25, H.&G.N. Sur.	Spudded and S.D.
Brown et al's No. 1 Duncan, 330 ft. S and E, NW, Sec. 93, Blk. 3, I.&G.N. Sur.	S.D. 2,720 ft.
Danciger O. & R. Co.'s No. 3 Byrum, 330 ft. from N line, 330 ft. from E line, Sec. 188, Blk. 3, T.&N.O. Sur.	Moving in material.
Gulf Oil Corp.'s No. 1 Catlin, 2,310 ft. from N line, 330 ft. from E line, Sec. 27, Blk. 3, I.&G.N. Sur.	Moving in.
Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W, cor. SE, Sec. 200, Blk. B-2, H.&G.N. Sur.	S.D. 3,010 ft; cleaned up fishing job.
Jewel Oil Co.'s No. 1 Meers, 330 ft. from S and W of NW SW, Sec. 106, Blk. 3, I.&G.N. Sur.	Pulling pipe 2,378 ft.
Nelson et al's No. 1 Crews, 330 ft. S and E, NW, Sec. 12, Blk. 25, H.&G.N. Sur.	S.D. 2,619 ft.
Nipper et al's No. 1 Morse, 330 ft. from N and E, Sec. 1, Blk. 26, I.&G.N. Sur.	S.D. 2,365 ft.
Operators Royalty & Prod. Co.'s No. 2 Arnold, 330 ft. from S and W, Sec. 149, Blk. 3, I.&G.N. Sur.	Rig.

(Continued on Page 149)

Well in East Texas Is Drilled in Lake

Water Proof Cellar Constructed in 20 Feet of Water. Heavy, Coated Piling Support Derrick. Storage Tanks on Shore

By L. G. E. Bignell
Petroleum Engineering Editor

In the north portion of the East Texas oil field between the towns of Longview and Gladewater there is a body of water known as Lake Deverna, across the north end of which passes the highway between those towns. In the course of development of its property in the William G. Painter Survey, the Tidal Oil Co. made a location for a well in approximately the middle of the north arm of this lake and preparations to drill presented many interesting problems for the engineering and production departments of the company.

The location is known as Tidal Oil Co.'s No. 2 Lake Deverna, in the William G. Painter Survey, Gregg County, Texas. The surface pipe was set January 1 and drilling the 9-inch hole started January 4. Making ready to start this work required about two weeks' time because it was necessary to build a runway from the shore to the drilling site and then prepare pile foundation for the derrick.

The design of runway and foundation was carefully worked out by the engineering department and contract for the work let to the Fox Rig Co. Creosoted yellow pine piles were used throughout and many of them were 12 inches in diameter and 40 feet long. There were 156 piles in all driven for the permanent structure, while many more were placed for a superstructure used for handling the pile driver and other equipment during the construction period.

The runway extends from the west bank of the lake and leads past the derrick location to provide a means of getting to the casing rack on the east side of the derrick. The general construction consists of piles driven into firm ground at the bottom of the lake and some of those piles forming the foundation for the derrick have penetrated 12 feet into the hardpan to provide a solid support for the derrick. The water in the middle of the lake is about 20 feet deep under normal conditions and the derrick floor is about 8 feet above mean water level.

The piles are capped by heavy timbers and stringers and a heavy plank roadway laid on this structure, over which all equipment and supplies were hauled to the derrick site.

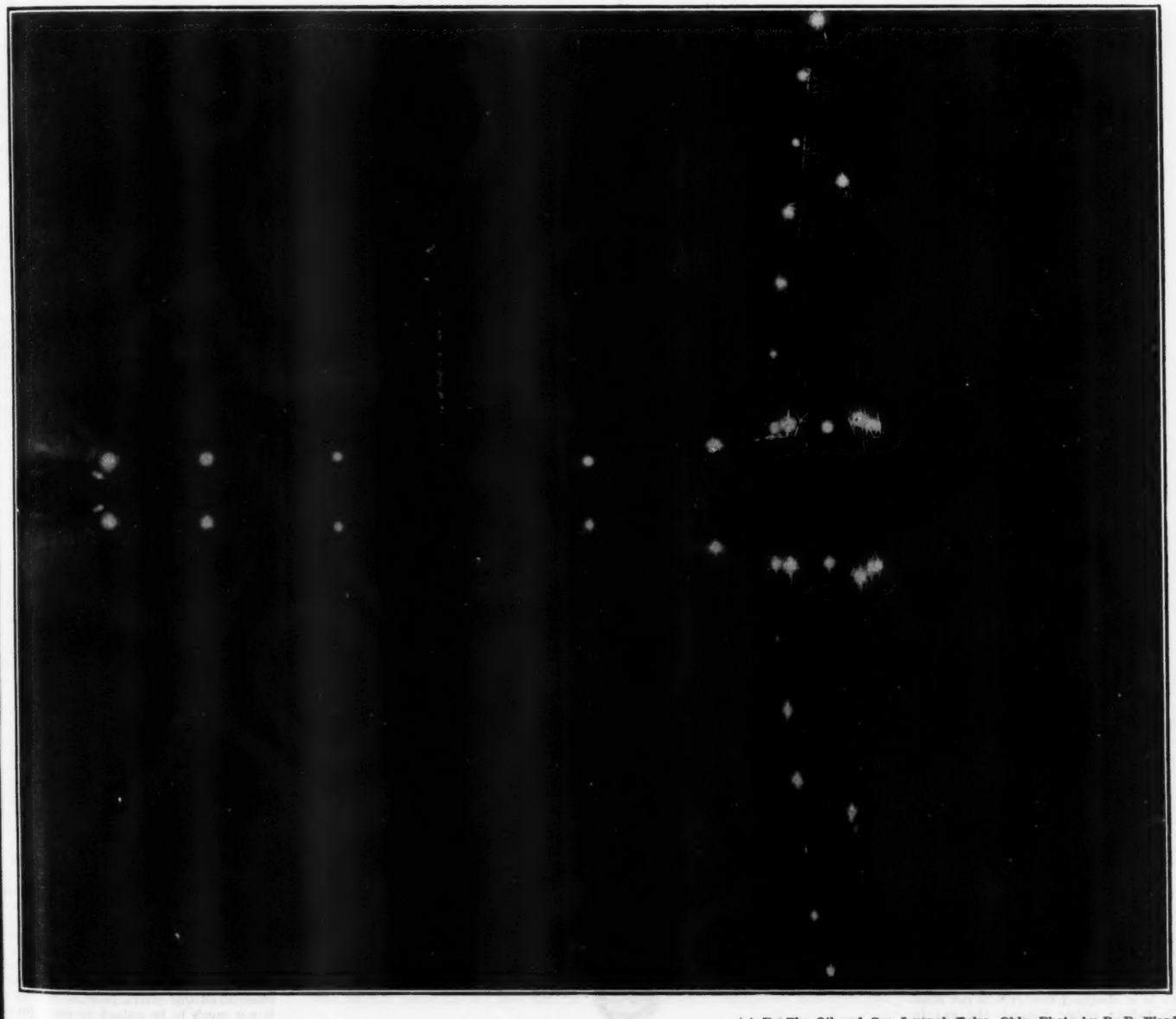
To form corners for a 94-foot high Parkersburg Rig & Reel Co. steel drilling derrick, nine piles were driven for each corner and tied together with heavy timbers at the top and the derrick is bolted to this structure. In addition to the derrick foundation, there is provision made for a pumping front for the equipment to be used when the well ceases to produce naturally.

The boilers, feed pumps and slush pumps are all placed on the west bank of Lake Deverna above high water level and steam and mud conducted to the engines and pumps by pipe lines laid along the runway. The slush pits are also on the west bank and there was a slight delay in drilling due to the fact that heavy rains during January caused the lake to overflow and flood them.

One interesting feature of this installation is the cellar, which was specified as "water-tight," 8½ feet inside diameter. The reinforced concrete walls are 18 inches thick and in forming them double caissons were sunk to lake bottom. The water, mud and silt inside the caissons was pumped out and the forms were lowered to hard pan and the concrete poured. When the job was finished a dry cellar was secured and the well was started and drilled in the regular manner followed in rotary operation.

In making specifications for the wooden runway and foundation, the timbers selected were of the class used in railroad construction and have an estimated life of 50 years. The whole structure is of the best material and good for many years of service.

(Continued on Page 146)



—(c) By The Oil and Gas Journal, Tulsa, Okla. Photo by R. B. Ward.
Night drilling scene at Tidal Oil Co.'s No. 2 Lake Deverna, William G. Painter Survey, Gregg County, Texas, as seen from the highway between Longview and Gladewater.

New Method of Lifting Fluid in Wells

Result of Long Study of Difficulties Encountered in Deep Wells Where Pressures of 1,000 to 1,500 Pounds Are Common

By H. W. Fletcher
Chief Engineer, Hughes Tool Co., Houston, Tex.

Raising oil economically from deep wells is technically a more difficult problem than is at first apparent. The fluid is often a mixture of oil, sand, salt water and gas, and may contain paraffin and hydrogen sulphide. Even such a combination could be handled readily were it not for the high lifting pressures, often exceeding 1,000 pounds per square inch, frequently encountered. High lifting pressures require close fitting pump plungers or equivalent to cut down piston leakage. Maintaining these close fits in the presence of sharp sand is a difficult problem, intensified by the fact that the pump is in a relatively inaccessible location near the bottom of the well. High lifting pressures also result in relatively large and alternating stresses in the subsurface equipment, which in the presence of salt water or hydrogen sulphide result in corrosion fatigue, producing mechanical failures and consequently costly shutdown.

Since these troubles are intensified by increased height of lift, it seemed that some radical departure must be made from orthodox pumping methods to provide more satisfactory performance at present pumping depths and to handle the deeper wells that must inevitably be produced in the not distant future.

New Method of Lifting Fluid

In an attempt to avoid the disadvantages inseparable from lifting systems where pressures of 1,000 to 1,500 pounds per square inch are common, the Hughes Tool Co. some eight years ago began a series of experiments which have culminated in the development of a new method of lifting fluid from deep wells. Figure 1 illustrates the apparatus which consists essentially of a special string of reamed tubing supported in a flowhead and carrying at the lower end a footpiece. This tubing must be truly round and of accurate internal diameter, but is not necessarily highly polished. The coupling threads must be accurately aligned to avoid any offset in the bore of the two pipe ends joined by the coupling. It is not possible to use commercial pipe end couplings for this reason, but the pipe must be reamed full length to secure the necessary accuracy. Traveling in this tubing is a free plunger made of stainless steel or some similar corrosion resisting material, and consisting of a hollow shell fitted at the lower end with a dart shaped check valve loosely held in place by a cage attached to the lower end of the plunger sleeve. This plunger makes a complete trip from the footpiece to the flowhead and return each stroke, and brings up a relatively short column of fluid, say 200 or 300 feet at a time. The motive power is compressed gas, either furnished naturally by the formation, or supplied through the casing valve from a compressor station or pipe line.

The operation of the equipment is as follows:

The tubing is run into the hole to a point where the footpiece is at the desired distance below the estimated pumping level of the well, and the surface equipment assembled as shown. The plunger is then inserted in the surge chamber and the plunger trap valve is slowly opened. When the gate of this valve has been withdrawn a little more than halfway, the check valve in the plunger falls to the open position by gravity. As this gate is further withdrawn, the entire plunger is released and falls with a velocity of from 40 to 50 feet per second until it reaches the fluid and then with a speed of from 6 to 8 feet per second until it reaches the seat. The plunger valve is so designed that it will not close while falling either through the gas in the tubing or through the fluid. When the plunger reaches the seat, it seals the seat opening and gas pressure consequently builds up under the plunger valve. A few pounds pressure is sufficient to raise this valve to the closed position and further increase in casing pressure is then exerted over the whole cross section of the plunger, raising it with its load of fluid to the surface. When the top of the fluid column reaches the slots in the nozzle, the fluid spills off into the flow line, and as the load is reduced the plunger rises more and more rapidly. Some oil accumulates in the stack directly above the nozzle and when the plunger finally passes the slots and strikes this oil, the pressure set up in the plunger body opens the plunger valve and allows the plunger to again fall to bottom.

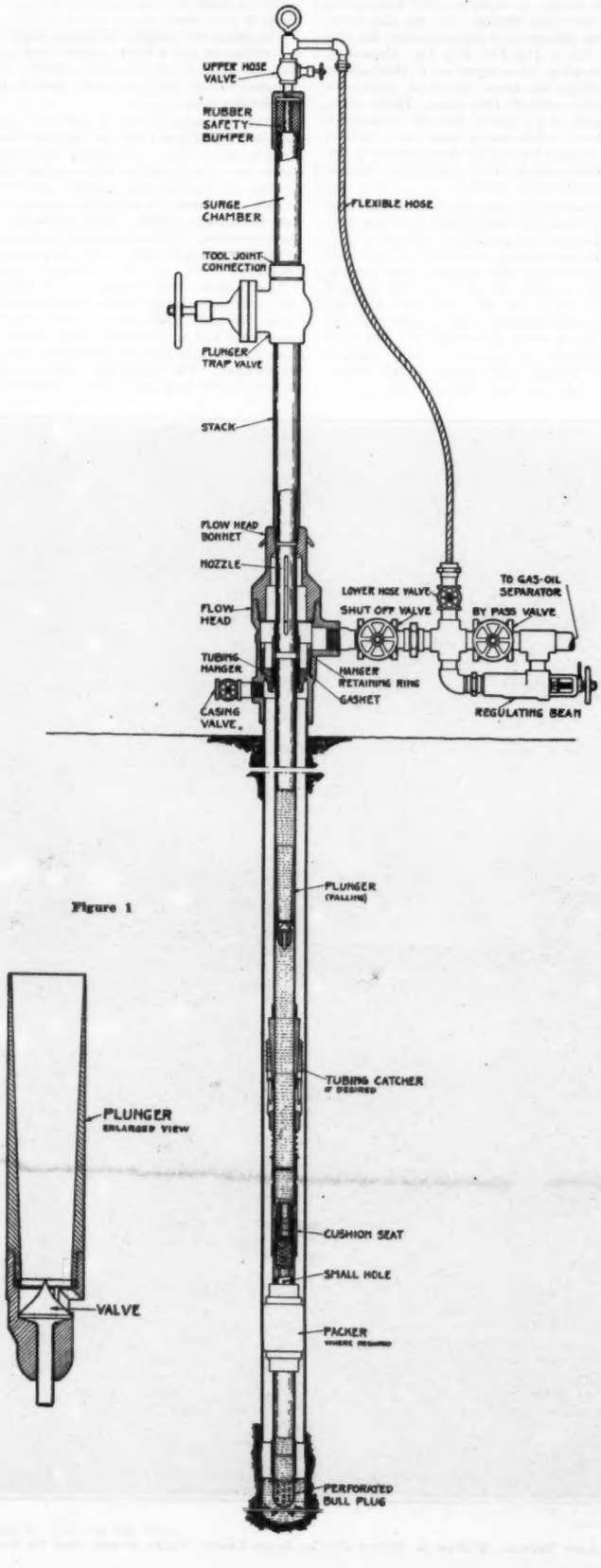
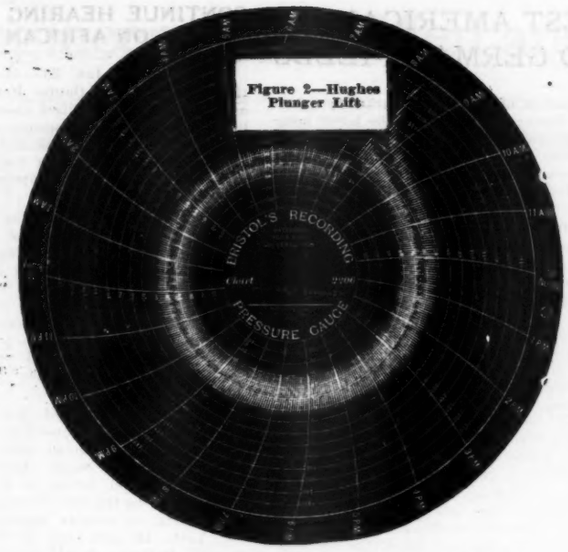


Figure 1

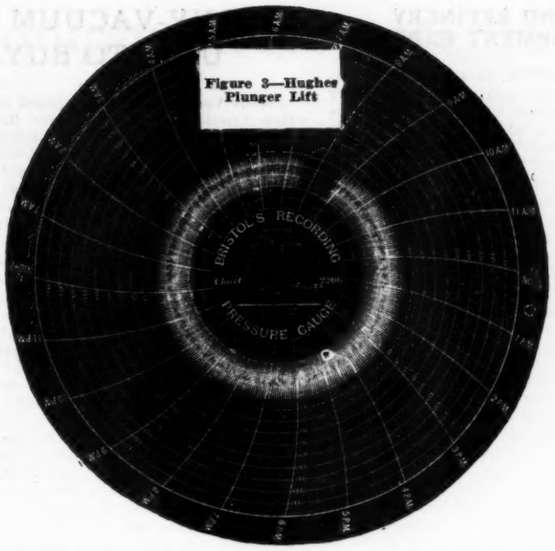
The well, of course, heads up during the installation of the apparatus and consequently the fluid level falls as production proceeds and successive heads become smaller and smaller until that point is reached where the fluid comes into the well at the same rate at which it is removed, after which cycles repeat, discharging a uniform quantity of fluid per stroke with astonishing regularity. Figure 2 shows a pressure chart from the discharge of a well starting up after Sunday shutdown at about 8:20 a.m. pumping down the accumulated head to a large extent within the first three hours. Figure 3 shows a chart from the same well made on the last day of the week and illustrates steady operation.

Low Lifting Pressure

It is obvious that the lifting pressure required is low and practically independent of the depth of the hole. On the other hand the quantity of gas required depends largely on the distance through which the load is lifted since the entire length of tubing must be filled with gas each stroke to a pressure equal to that which exists below the plunger at the time the plunger reaches the nozzle. In addition there is a loss of gas while the plunger is falling which can be estimated with fair accuracy from the percentage of total cycle time during which the plunger is falling. It is not necessary that the plunger fit the tubing closely for the reason that the difference of pressure tending to force gas past the plunger is only that amount required to support the weight of the plunger alone, which is only 2 or 3 pounds per square inch, and because in traveling up the pipe a film of fluid is continuously wiped into the space between the plunger and tubing, maintaining a fluid seal that effectively prevents any gas leakage at so small a pressure difference. Figure 4 shows a series of curves indicating the number of cubic feet of free gas required per barrel of fluid lifted to fill the tubing from footpiece to flowhead to a pressure 20 per cent in excess of that required to counterbalance the weight of the fluid lifted (the excess pressure being required to overcome friction) and disregarding the expansion of the gas in the tubing which takes place where the head of oil lifted each stroke is an appreciable percentage of the total lift. These curves do not take into account the loss of gas while the plunger is falling, which must be estimated as indicated above. It is obvious that if the footpiece was set so shallow that only a teacup full of fluid was picked up each stroke that the gas-oil ratio in cubic feet per barrel would be enormous since the entire string of tubing must still be filled with gas each stroke at a pressure slightly above atmosphere, whereas the amount of fluid produced would be negligible. On the other hand the curves indicate that there is not much to be gained in reduction



Record of discharge pressure—2⅜-inch tubing, lift 1,450 ft., production 72 bbls. oil per day, strokes 333 per day, pick-up 0.216 bbls. per stroke



Record of discharge pressure—2⅜-inch tubing, lift 1,450 ft., production 74 bbls. oil per day, strokes 339 per day, pick-up 0.218 bbls. per stroke

s-oil ratio by picking up in excess of 0 feet per stroke except perhaps in tremely deep wells. It is obvious, erefore, that lifting pressures need not greater than 100 pounds per square ch except where it is desired to pro- ce more fluid than can be handled at e lower pressures. Field experiments date have demonstrated that 500 feet gas per barrel of fluid for each 1,000 et of lift is ample to maintain steady eration, and several experiments have en made where satisfactory perform- ce was secured with considerably less an 300 feet of gas per barrel of fluid r 1,000 feet of lift. The operation of e equipment is inherently stable, that is, e apparatus automatically adjusts the ight of the fluid column picked up ch stroke to a point where the avail- le gas is just sufficient to supply the of strokes shown on the chart, which gives the amount of fluid lifted each stroke. Knowing the size of the tubing, it is simple to compute the number of feet of fluid picked up each stroke and subtracting this figure from the total depth of the footpiece gives at once the effective pumping level for the day.

Regulation of production is secured mainly by adjusting the footpiece to such a point as will maintain the desired back pressure at the bottom of the hole, but may be controlled to a considerable extent by regulation of the bean in the flow line provided there is sufficient gas available to produce the well against a choke. Since the total gas required per stroke increases with the lifting pressure, it is obvious that if this pressure is raised by choking and the amount of fluid discharged per stroke is reduced, the gas-oil

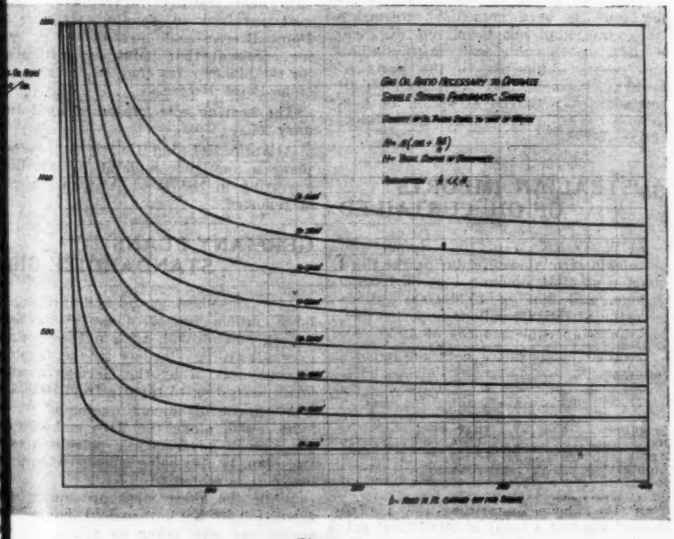


Figure 4

quirements. Any reduction in the gas pply increases the fluid picked up each oke and conversely an increase in gas pply reduces the pickup.

Continuous Record

A continuous record of the performance this equipment is readily secured by stalling a two-pen pressure recorder, e pen connected to the casinghead and other to the flowlines just ahead of e choke. The pumping level is ac- rately known at all times since the mber of feet of fluid picked up each oke can be easily determined by divid- g the total production by the number ratio required for operation must increase.

There is little about this apparatus to cause trouble since the weight of the fluid lifted is not supported by the equipment but by gas pressure, and the plunger has a clearance of one thirty-second inch or more in the tubing. If, however, it is for any reason desired to fish the plunger from the well, this is readily accomplished by a light spear on a small line. In normal operation the plunger may be removed for examination at any time as follows:

The shutoff valve in the flow line is closed and the upper and lower hose valve is opened. On the next discharge stroke the fluid discharges through the top of the surge chamber and the flexible hose, and the plunger follows it to the rubber safety bumper. When the plunger contacts with this bumper, it seals off the gas and shuts the well in, and the plunger is held in place by the gas pressure below. The plunger trap valve may then be closed, the surge chamber unscrewed and the plunger removed for examination. The entire operation can be easily accomplished in 5 or 10 minutes.

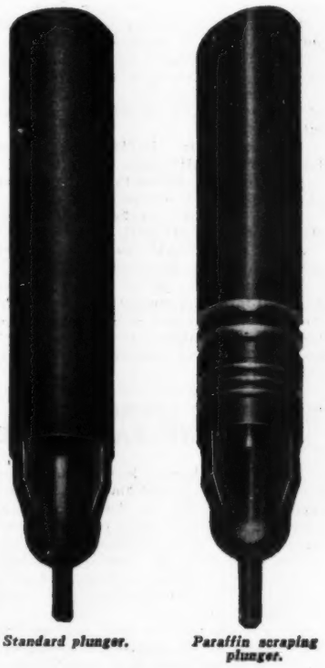
Scraping Paraffin

Figure 5 shows a cut of the standard plunger, and also of a special plunger developed for scraping paraffin. This paraffin scraping plunger has made some very successful runs in a territory where paraffin troubles are quite severe, the only attention required being to screw the flow bean in the discharge line down to its seat and reset to the proper opening twice a day to prevent clogging of the discharge by the paraffin removed from the tubing.

That this method of pumping has accomplished the desired results to a very high degree is obvious from the consideration of the construction and method of operation. Since lifting is accomplished at low pressure, no close fits are required and hence wear from sand in the fluid is of decidedly minor importance. Crooked hole does not affect operation provided tubing can be run in the well without kinking to a point where the tubing wall caves in. Gas does not reduce the volumetric efficiency but on the contrary provides the power for lifting the production, while paraffin troubles are reduced mainly to the problem of keeping the flow lines and tanks steamed out.

Where formation gas is adequate in amount to produce the fluid production of the well, the lifting cost with this equipment is obviously comparable with that of a flowing well. Where outside gas must be supplied to supplement formation gas, the lifting cost will depend, of course, on the cost of providing this gas at pressure, but here again the overall cost will be surprisingly low partly because of the low pressures required but largely because of the great reduction in maintenance due to the fact that no parts of the equipment are highly stressed. Where gas is not available, compressed air may be used except where salt water is encountered in which case corrosion is so severe as to interfere with proper plunger action. Due to the fact that it is not possible to determine the pumping level in a given well in advance, several experimental settings are usually required to locate the proper position for the footpiece, but once this factor has been determined, the apparatus will function for long periods of time with a minimum of attention.

Note—Literature and further information will be furnished upon request. Address all inquiries to Hughes Tool Co., Houston, Tex.



Standard plunger. *Paraffin scraping plunger.*

Figure 5.

COLOMBIAN OIL LANDS

There apparently is no interest in the exploitation of the national oil lands in Colombia as no applications have been received by the government since the opening date for filing under the new law. Concession for lands in the Carare region of the Magdalena Valley may be granted in February.

OIL LAKE IN BAVARIA?

Dispatches from Aschaffenburg, Bavaria, report experiments had disclosed the existence of a subterranean oil lake 9 square miles in area at Dittlofsroda, near Wertzburg, and also 16 square miles of potash deposits extending toward the River Main.

FIELD AND REFINERY EQUIPMENT EXPORTED

WASHINGTON, D. C., Jan. 25.—Exports of oil well and refinery machinery during November, 1931, totaled in value $172,446, which was a decline from $432,581 in October. The exports for November, 1930, were valued at $757,758.

Shipments abroad of all American industrial machinery during November, 1931, amount to $6,931,578, this figure representing a decline of 11 per cent as compared with October exports

Exports of well and refinery machinery to Soviet Russia in Europe experienced a decided slump in November, according to the Bureau of Foreign and Domestic Commerce. There was no record of such exports of petroleum and gas well drilling apparatus and only $1,710 worth of "other well and refinery machinery," whereas for a long time the Soviet Republic has been the leading customer of the United States for such exports.

The Argentine was the leading country taking our exports of petroleum and gas well drilling apparatus, the amount being $14,578, together with $12,859 worth of other petroleum well and refinery machinery.

British India took $14,075 worth of petroleum, gas well and drilling apparatus and $3,073 worth of other petroleum well and refinery machinery.

The Netherland West Indies took $12,220 worth of the former and $12,859 of the latter class of machinery.

Colombia took $4,144 of the former and $10,832 worth of the latter class.

Mexico took $7,406 worth of the former and $14,190 of the latter class.

Rumania took $4,407 worth of the former and $5,753 worth of the latter.

Canada took $3,478 worth of the former and $5,410 worth of the latter.

The United Kingdom took $250 worth of the former and $6,867 worth of the latter.

Venezuela took $4,741 worth of the former and $7,291 worth of the latter.

Peru took $1,853 worth of the former and $2,458 worth of the latter.

British Malaya took $6,808 worth of the former and $24 worth of the latter.

Japan took $3,515 worth of "other petroleum well and refinery machinery."

The total value of all petroleum and gas well drilling apparatus exported in November was valued at $78,282 and the total value of other petroleum well and refinery machinery exported was $86,353. —C. E. K.

MONOPOLY APPROVED BY CHILEAN SENATE

The Chilean Senate has approved the project for the establishment of a government monopoly on the importation, refining and marketing of petroleum and its products. Authorization was given the government by the measure to establish its own importing, refining and marketing company or to associate itself with some foreign company.

In as much as little local interest has been shown in the petroleum monopoly, Santiago advices state, it is expected that if the monopoly measure is actually enacted into law the government will seek bids from foreign oil companies rather than attempt the formation of a government agency to import, refine and distribute.

SOVIET OIL OUTPUT SHORT

NEW YORK, Jan. 25.—Production of crude petroleum in Russia for 1931 amounted to 22,300,000 tons, 16 per cent under the program for the year but approximately 4,000,000 tons ahead of 1930 output, according to official announcement in Moscow. The report stressed the fact that world production fell off considerably last year, and adding that Russia was ranked only by the United States as a crude oil producer in 1931, said: "The development of new technical methods virtually guarantees fulfillment of the aim to surpass the most advanced capitalistic countries," in the near future.

SOCONY-VACUUM LATEST AMERICAN UNIT TO BUY INTO GERMAN FIELDS

Socony-Vacuum Corp. has joined with other American interests and the Royal Dutch-Shell group in crude oil development work in Germany, Deutsche Vacuum Oel A.G., a subsidiary of Socony-Vacuum, having acquired drilling rights in the Hanover area from the Raky interests. The acquisition is reported to have involved approximately $600,000.

Cities Service Co. has acquired considerable acreage in German oilfields, and a number of other American companies, including a number of the large integrated units, have had geologists surveying the German production situation. Royal Dutch-Shell, which entered the German production picture last year, is now credited with holdings of close to 1,000,000 acres.

Vacuum Oil Co., prior to its recent merger with Standard Oil Co. of New York, announced plans for a new German refinery, and it is believed that German crude production will be sought to supply this plant, as the high German import duties on crude imports would impose a severe handicap on the company's operations if it were dependent solely on foreign crude for its German refining activities.

Germany has witnessed considerable expansion of American marketing interests during the past year, the latest large American group to extend its activities in that country being Pan American Petroleum & Transport Co., which recently acquired a controlling interest in one of the larger German distributing organizations.

North European Oil Corp. was the first American company to undertake crude oil development operations in Germany on a large scale, and was responsible for the introduction of rotary drilling into that country and the development of deeper producing horizons which had hitherto remained untapped in that country. North European has disposed of some of its acreage, principally to Royal Dutch-Shell, and is planning a more active drilling campaign in proven areas, following the recent completion of an extensive geophysical campaign.

Recent discovery of producing sands underlying the salt domes on which potash mining operations have been carried on for years has led to the entry of a number of German potash firms into the petroleum field, and further development of German production is expected to result in considerable new refinery construction in that country.

CHARTERS INDICATE MORE EXPORT SALES

NEW YORK, Jan. 25.—More activity in the tanker charter market last week, in so far as fixtures for shipments from American ports are concerned, indicated a resumption of business in the Gulf export market for both crude and refined products.

Tanker rates continue at low levels, and the supply of vessels is still far in excess of demand.

Fixtures reported during the week included the following:

Motorship Trontolite (British), 3,586 tons net, crude oil and/or fuel oil, Gulf to Continent, 8s. 6d., January loading.

Steamer El Grillo (British), 4,414 tons net, crude oil and/or fuel oil, Gulf to Continent, 8s. 6d., January loading.

Motorship Dordrecht (Dutch), 2,515 tons net, lubricating oil, three consecutive voyages Gulf to United Kingdom/Continent, 14s., first loading February.

Motorship Hilda Knudsen (Norwegian), 5,482 tons net, (or sub.), 12 months time charter, dirty, intended California Australasia trading, under 4s. 6d.

Steamer Arcola (Italian), 3,893 tons net, 3 to 5 months time, about 3s. 9d.

Motorship Nyholt (Norwegian), 10,000 tons, crude, Aruba to Teneriffe, 5s. 9d., February loading.

Motorship Nine Brothen (Norwegian), 3,560 tons net, clean, Black Sea to Dunkirk and Rouen, 8s., February loading.

Motorship Petrofina ——, clean, Black Sea to Dunkirk and Rouen, 8s., February loading.

VENEZUELA DECLINES

Venezuelan crude petroleum production fell off 17,824,624 bbls., or approximately 13 per cent, in 1931 according to figures compiled by O'Shaughnessy's "Oil Bulletin." It was the second successive year to show a decline. Total output in Venezuela last year was 115,763,796 bbls., a daily average of 317,161 bbls., compared with 133,588,622 bbls., a daily average of 365,996 bbls. in 1930.

MEXICAN OUTPUT DECLINED

Production of crude petroleum in Mexico during 1931 aggregated 33,038,680 bbls., according to preliminary estimates of the petroleum department of the Ministry of Industry, Commerce and Labor. This was the lowest yearly production since 1915 and compares with 39,529,914 bbls. produced in 1930.

REVISE FAR EAST PETROLEUM RATES

Recent dissension in the ranks of steamship companies operating in the Far Eastern trade has been remedied, and the conference has revised its rates upward on a number of products.

Freight rates on carbon black, lubricating oil, petroleum, and refined product remain open; that is, each line is authorized to contract for shipments at whatever rates it may obtain.

Asphalt is now quoted at $8 per ton, weight or measure, through April 1.

On shipments to the Red Sea, East Africa, and India, an ocean rate of $5 per ton has been named by steamship lines, this applying to a ton of 2,240 pounds, or 48 cubic feet, ship's option, and covers shipments to the ports of Bombay, Karachi, and Port Okha on all commodities with the exception of hazardous cargo, and in some cases lubricating oil.

AUSTRALIAN IMPORTS OF OIL CURTAILED

NEW YORK, Jan. 25.—Imports of petroleum into Australia during the third quarter of 1931 amounted to 66,400,000 gallons, a decline of 15,389,000 gallons from the 81,789,000 gallons imported during the comparable months of 1930.

Detailed comparative data on imports follow:

	Gallons	
	July, 1931	Sept., 1930
Gasoline	33,398,000	35,590,000
Kerosene	4,316,000	11,263,000
Crude petroleum	14,472,000	27,588,000
Lubricating oil	2,072,000	3,461,000
Residuals	12,142,000	3,887,000

Of the above quantities, the United States supplied a total of 20,073,000 gallons, which was 12,163,000 gallons under the total quantities shipped to Australia in the comparable three months of 1930.

POLAND INCREASES TAX

Efefctive January 14, the Polish government has increased the customs clearance tax on goods imported into Poland by 10 per cent. The manipulation tax in operation since 1926, changeable on most goods imported into Poland, will now be 11 per cent of duty on ordinary commercial shipments and 22 percent of the duty on parcel post and express shipments. The former rates were 10 and 20 per cent, respectively.

CONTINUE HEARING ON AFRICAN RATES

NEW YORK, Jan. 23.—Hearings on the complaint of Atlantic Refining Co. against alleged unjustified discrimination in freight rates on shipments of refined petroleum from New York and Philadelphia to South Africa were continued before Shipping Board Examiner H. S. Brown here this week.

F. M. Neall, assistant to the vice president of Atlantic Refining in charge of export sales, testified regarding the company's export business during 1928, 1929 and 1930, the period covered in the company's complaint, the types of competition it was called on to meet, and the importance of securing rates and service equivalent to that afforded to its East Coast competitors by the conference steamship lines.

William Boyd of Boyd, Weir & Sewell, steamship agents, testified that his company had contracted with Atlantic Refining Co. for South African shipments on case oil, basing its rate on information as to the rate Vacuum Oil Co. was getting on similar shipments from New York. He said that, in his opinion, Atlantic Refining should have the same rate from Philadelphia as other oil companies shipping from New York, and added that it was found possible to get quicker dispatch from Point Breeze, Atlantic's marine terminal, than at other points in the port of Philadelphia, and that there was no material difference in cost involved in going to Point Breeze. Coal is about $1 a ton less at Philadelphia than at New York, he said.

Cletus Keating, counsel for the conference lines, declared that relatively small amounts of cargo available at Philadelphia and the added cost involved in sending freighters there justified a differential in the rate between Philadelphia and New York on shipments for South Africa. The contract with the Vacuum for case oil shipments from New York, he said, provided for a minimum of 150,000 cases annually for two years, whereas there was no provision for similar volume in the one-year contracts made by Atlantic Refining.

A number of representatives of steamship lines testified regarding the extra cost involved in sending steamers to Point Breeze, and cited delays in loading cargo at that point as justification for the higher rates charged on shipments from Point Breeze.

The hearing was adjourned until January 27.

Atlantic Refining Co., it is reported, plans a similar complaint against lines operating in the West African trade, it is reported.

GERMANY PLANS TO STANDARDIZE OILS

A standardized motor fuel, utilizing a large proportion of domestic gasoline, benzol, and alcohol, with unified control over all filling stations in the country is contemplated by the German government, according to reports from Berlin.

Allotment of import quotas of petroleum, much along the lines embodied in the French government's petroleum control plan, is also being considered in Germany, it is stated.

While the above steps are under consideration by the government, no definite action has been taken as yet, and upon approval of the plans, if finally adopted, a period of several months is expected to elapse before the new regulations are actually put into effect.

NEW FIELD IN ARGENTINA

NEW YORK, Jan. 25.—Important petroleum deposits have been uncovered in the Department of Burruyacu on the borders of Salta in the Tucuman Province in Argentina, according to reports from Buenos Aires. The government oil monopoly is thoroughly test drilling the new field and it is expected that the exploitation rights will be retained by the government oil body.

Engineers, Field Men and Equipment Representatives

(1) Left to right—Miss Francis Griscom, Drumright, Okla.; W. H. Danforth, Deep Rock Oil Co., Drumright, Okla.; I. T. Simmons, Barnsdall Oil Co.; and H. H. Echols, Barnsdall Oil Co. (2) Left to right—T. A. Newton, Twin State Oil Co., Yale, Okla.; Walter Locker, Prairie Oil & Gas Co., Drumright, Okla.; and L. B. Rhees, Prairie Oil & Gas Co., Jennings, Okla. (3) Left to right—John H. Morgan, sales manager, Fluid Packed Pump Co., Oklahoma City, Okla.; L. N. Smith, Deep Rock Oil Co., Seminole, Okla.; and Louis Slaven, Fluid Packed Pump Co. (4) Left to right—W. H. Bettes, Gypsy Oil Co., Drumright, Okla.; W. Williams, Empire Companies, Drumright, Okla.; and D. A. Jordan, The Texas Company, Tonkawa, Okla. (5) Left to right—D. M. Knowlton, Phillips Petroleum Co., Bartlesville, Okla.; and D. O. Larkin, Happy Belting Co., Tulsa. (6) Frank Carruthers, Norvell & Wilder, Houston, Tex.; and L. G. E. Bignell, petroleum engineering editor, The Oil and Gas Journal, Tulsa.

Pipe Line Construction News

WESTERN SERVICE CORP. MAY BE REORGANIZED

Plans for complete reorganization of the Western Service Corp., under which all creditors would be satisfied in full, new stocks issued and the receiver dismissed, will be presented in federal court at Oklahoma City soon.

The move has been worked out by E. R. Ernsberger, president of the utility, and a group of Chicago financers, it was reported. The deal has not been closed, however, final decision resting with the Chicago group.

In the reorganization, it is possible the Western may be merged with another utility company through a stock transfer, the other company taking over the liabilities of the Western as well as its holdings.

All of the plans contemplate taking over the Western Service Corp. of Oklahoma, Kansas and Missouri, the corporation holding franchises in each of the three states for the distribution of gas. It probably would not, however, include the Western Service Co., holder of the Shawnee, Okla., franchise.

Complete audit of the holdings of the Western Service Corp. has been started for filing with the federal court, as a possible basis for any reorganization deals that may be proposed.

Affairs of the Western Service Corp. now are under direction of Logan Cary, federal court receiver.

BILL TO SEGREGATE PIPE LINE COMPANIES

WASHINGTON, D. C., Jan. 25.—Representative Homer Hoch of Kansas has introduced a bill, which was referred to the Committee on Interstate and Foreign Commerce, to amend paragraph 8 of section 1 of the Interstate Commerce Act, as follows:

"It shall be unlawful for any common carrier subject to the provisions of this act to transport from any state, territory, or the District of Columbia, to any other state, territory, or the District of Columbia, or to any foreign country, any article or commodity, other than timber and the manufactured products thereof, manufactured, mined, or produced by it, or under its authority, or which it may own in whole or in part, or in which it may have any interest, direct or indirect, except such articles or commodities as may be necessary and intended for its use in the conduct of its business as a common carrier."

TEXAS-EMPIRE OWNERSHIP

NEW YORK, Jan. 25.—The Texas Corporation and Cities Service Co. each have a 50 per cent interest in Texas-Empire Pipe Line Co., and each has a 37½ per cent interest in Texas-Empire Pipe Line Co. of Texas, it was announced here. Tidal Oil Co. has 25 per cent.

Both lines have been in operation for some time, and have a joint capacity of close to 145,000 bbls. per day, although only about 122,000 bbls. daily are being run through the systems at present.

The Texas-Empire line extends from Cushing to Chicago, a distance of 679 miles, while the Texas-Empire Pipe Line Co. of Texas line runs from Longview to Port Arthur, about 125 miles.

BOOSTER PLANT IN KANSAS

Shell Petroleum Corp. has started work on a new booster station unit to increase outlet of crude from storage on leases in east McPherson County, Kansas. The trunk line extends south from the field. Capacity of the unit will be 5,000 to 6,000 bbls. of crude oil daily.

RESOLUTION FOR INVESTIGATION OF PIPE LINES PASSED BY HOUSE

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Jan. 25.—Pipe lines, among other public utilities, will be investigated under the terms of a resolution passed by the House of Representatives. The resolution authorizes the Committee on Interstate and Foreign Commerce as a whole or by subcommittee "to investigate (1) the ownership and control, direct or indirect (through stock ownership or control or otherwise) of stock securities or capital interests in any public utility corporation engaged, otherwise than as a common carrier by railroad, in the transportation of persons, or the transportation, transmission or sale of property, energy or intelligence, in interstate or foreign commerce, by holding companies, investment trusts, individuals, partnerships, corporations, associations and trusts and (2) the organization, financing, development, management, operation and control of such holding companies, investment trusts, partnerships, corporations, associations and trusts with a view to determining the effect of such ownership and control on interstate and foreign commerce and, to the extent necessary to determine the effect of such ownership and control, to make like investigation of public utility corporations so engaged."

The committee is authorized to hold public hearings anywhere and to incur all necessary expense.

NO PUBLIC FINANCING IS NOW CONTEMPLATED

CHICAGO, Jan. 25.—Recording of a mortgage on the properties of the National Gas Pipe Line Co. of America to secure an issue of $60,000,000 bonds in denominations of $500 and $1,000 with interests at 6 per cent is not a forerunner of public financing, an official of the company stated.

The issue of bonds, to be known as series A maturing in December, 1946, will be delivered to those companies which advanced for the construction of the line as partial reimbursement for their advances.

While public financing to defray part of the cost of the pipe line project may be undertaken later, it is not contemplated within less than a year or two, the company official indicated.

Natural Gas Pipe Line Co. of America owns and operates a natural gas pipe line from Texas to Chicago. It is jointly controlled by Cities Service Co., Columbian Carbon Co., a group of the Insull public utility companies, Standard Oil Co. (New Jersey), Southwestern Development Co. and The Texas Corporation.

SALT CREEK LINE ABANDONED

Petition has been filed with the Wyoming Public Service Commission to abandon line of the Illinois Pipe Line Co. from the Salt Creek oil field to Illco, thence to Casper. The line consists of 44.87 miles of 8-inch pipe, the entire length being in Natrona County. Total cost of the line is given at $1,000,000. Date of filing objections to the removal of the line, if any, expires January 30.

ENLARGE DRUMRIGHT STATION

Excavation work has been completed for the addition to a 100-foot extension to the Stanolind Pipe Line Co., booster station a mile east of Drumright, Okla. The extension will house two additional units to the plant. The increase in the plant's capacity is being made to provide pressure for a new 16-inch line recently constructed through this district.

ST. PAUL ELECTION

The Northern States Power Co. has been denied a renewal of its franchises in St. Paul. The company had made preliminary plans for construction of a line from Montana, across North Dakota and western Minnesota to serve Minneapolis and St. Paul.

NAME SUBCOMMITTEES OF CENTRAL GROUP

Charles F. Roeser, chairman of the general committee of the American Petroleum Institute's division of production, has appointed regional subcommittees on pipe lines of the Central Committee on Measuring, Sampling and Testing Crude Oil, for 1932. E. L. Adams, of the General Petroleum Corp. of California, Los Angeles, Calif., is chairman. Following are the committees:

Eastern area: D. S. Bushnell, chairman, Northern Group of Pipe Lines, New York; W. J. Brundred, Brundred Oil Co., Oil City, Pa.; and L. W. Young, Jr., South Penn Oil Co., Pittsburgh, Pa.

Oklahoma-Kansas area: Carl R. Weidner, chairman, Prairie Pipe Line Co., Independence, Kans.; Fred K. Haskell, Empire Pipe Lines, Bartlesville, Okla.; Bert Martin, Stanolind Pipe Line Co., Tulsa, and E. H. Skinner, Continental Pipe Line Co., Ponca City, Okla.

Rocky Mountain area: G. M. Vandaveer, chairman, Midwest Refining Co.; Pat Hennessy, Illinois Pipe Line Co., and L. F. J. Wilking, The Texas Company, all of Casper, Wyo.

Texas-Louisiana-Arkansas area: T. J. McMahon, chairman, Texas Pipe Line Co., Houston, Tex.; T. J. Fitch, Magnolia Pipe Line Co., Dallas, Tex.; Charles Fitzgerald, Pure Oil Pipe Line Co. of Texas, Dallas; R. W. Howe, Atlantic Pipe Line Co., Dallas, Tex.; E. C. Kincade, Gulf Pipe Line Co., Houston, Tex.; F. Ray McGrew, Standard Pipe Line Co. of Louisiana, Shreveport, La.; and J. A. Neath, Humble Pipe Line Co., Houston, Tex.

California area: Mr. Adams, chairman; O. O. Allen, Standard Oil Co. of California, La Mirada, Calif.; F. E. Coyle, Associated Oil Co., Wilmington, Calif., and C. E. Emmons, The Texas Company; A. H. B. Gore, Richfield Oil Co., William Groundwater, Union Oil Co. of California, and F. B. Sims, Shell Oil Co., all of Los Angeles, Calif.

WORK ON ESTERO BAY LINE

LOS ANGELES, Calif., Jan. 23.—Standard's gasoline line to Estero Bay is about 60 per cent finished and the company hopes to have it in operation about April. The total length is about 70 miles, of which close to 40 miles have been completed. It is a 8-inch line to be built at a cost of abou t$500,000. It is being laid to move natural gas, but, if desired, it can be used for crude oil. Standard's first pipe line which the new one parallels is a 10-inch.

PROGRESS BEING MADE ON GULF'S NEW LINE

Having established field headquarters at the Melton Hotel, Okmulgee, Okla., the Gulf Pipe Line Co. is laying the 8-inch pipe for its new line between Grayson and Perryman, Okla. The work is progressing satisfactorily and about 30 miles of pipe has been strung along the right of way, and about 12 miles is already welded and in the ditch.

The work of ditching is being done by about 225 former Gypsy and Gulf employes who have been given employment and are being paid the same salary they formerly received while they were regular employes of the Gulf or Gypsy companies. Preference has been given to men with families and the length of service has also been taken into consideration.

The ditch is being opened by hand labor and about 16 miles of it has been dug. The backfilling is being done by machine because the heavy, moist soil could not be handled economically by hand labor.

The Gulf Pipe Line Co. is electrically welding this line, which will be about 39.16 miles long when completed. For the firing line work the company is using its own machines, and has rented some light and readily portable machines for the bell welds and other work.

While there has been considerable rain since the work started early this month the lost time due to that cause has been only about one and a half days and it is now expected that the line will be completed in about three weeks or by about February 12.

LOOKS FAMILIAR

Laying a pipe line in Colombia.

Few products, in any field, are so clearly recognized for their superiority of service as –

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"Proven Protection for Pipe Lines"

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Chicago, 20 N. Wacker Drive
Cleveland, Union Trust Bldg.
Philadelphia, 401 N. Broad St.
Los Angeles, 2461 E. 8th St.
San Francisco, 345 Vermont St.

Oklahoma Production Hits Lower Level

Producers in Stripper Areas Ask That Proration Restrictions Be Lifted. Crude Oil Demand Continues Downward

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

Oklahoma producers continue to restrict their daily average production to approximately the market demand. Another decline in the daily average was reported for the week ending January 23, when the State averaged approximately 411,000 bbls. which was a reduction of 30,000 bbls. daily from the previous week.

Mid - Continent Petroleum Corp.'s No. 1 Farmer, SE cor. SW NW, Section 2-6-4, a wildcat in the southern part of Pottawatomie County, found salt water in the Wilcox sand at 4,418-31 feet. The test will probably be abandoned.

Activity increased in the leasing of acreage in the southeastern part of Seminole County after seismograph surveys. Several companies have been using geophysical instruments in and around the edges of the Greater Seminole area. This territory is considered to be favorably located for future development.

The oil production from the Greater Seminole area shows a reduction of approximately 15,000 bbls. a day and the daily averages from the Oklahoma City Field shows a like drop. The daily average from the Oklahoma City Field was 95,600 bbls. for the week ending January 23, the first week the daily average production has declined below 100,000 bbls. since the military shutdown was declared off.

Stripper Operators Petition

Stripper well owners in northeastern Oklahoma joined in a new movement during the week to seek relief from the statewide curtailment of production. A 10 per cent proration order applying to old fields has been in effect since January 1. A petition was filed with the Oklahoma Corporation Commission opposing the curtailment, by the Whitehill Oil Corp. and other stripper well owners in Nowata and Rogers Counties. The petition asks that curtailment be withdrawn from these wells.

It is estimated that the State has a total of 56,000 stripper wells and that in Nowata and Rogers Counties thousands of wells have a combined production of only 6,000 bbls. a day at capacity. For example Rogers County's 4,000 wells average only 0.35 bbls. of oil a day, while other counties average from .55 to 1.15 bbls. a day per well. The petition claims curtailing their production reduces revenue to less than operating costs and hastens water encroachment.

The petitioners also say that to operate these wells and leases requires more men than the operation of the same number of larger producers would require. Many operators are on the verge of bankruptcy it is said, and these stripper wells are their only means of support.

Since the first of last year the stripper well operators of northeastern Oklahoma have been handicapped in the operation of their properties. The Prairie Oil & Gas Co. quit purchasing crude oil, and another outlet was not obtained for nearly four months. Then crude oil was reduced to prices so low that thousands of these small wells were shut down because the cost of operation was greater than the price of crude oil.

Hundreds of these small wells were plugged and abandoned during the last year because of high operating costs, and due to the fact that they were not able to secure a pipe line connection. In some instances the owners of these properties turned the properties over to their employes for operation, the employes getting all revenue after the cost of the operation and taxes were paid.

The Oklahoma Corporation Commission set a day for the hearing, January 27, the day following the reopening of the Oklahoma City proration hearing.

Tatums' Troubles

A hearing on the alleged failure to take oil ratably from wells in the Tatums Field in Carter County was heard by the corporation commission. At the same hearing there were four cases asking for new potentials for wells in that field. No decision has been made.

The Gouin Oil Co. seeks to have the Magnolia Petroleum Co. take crude oil production from its wells in the Tatums Field. Wigton & Long also seek to have the Burke-Greis Oil Co. and Weleetka Pipe Line Co. take gas ratably from wells in the Weleetka area.

Four companies ask new potentials for wells in the Oklahoma City Field including Kedburg Oil Co.'s No. 1 Burris, Morgan Petroleum Co.'s No. 1 Stout, R. F. MacArthur's No. 1 Kammerdeiner, and Century Petroleum Co.'s No. 1 Wyatt.

Military authorities in the Oklahoma City Field ordered the pipe line connections to the Marshall Oil Co.'s No. 1 Buxton, in the north end of the field, cut off. The umpire's committee alleges the company has been producing oil when the well should be shut down.

Tom Slick Oil Co.'s No. 1 Classen, NW cor., Section 2-11-3w, in the north end of the field, blew out and was wild for about an hour, on January 20. It was shut in without much damage. A crew was cleaning out the well when a gas pocket blew the tools out of the hole.

New Big Well

Phillips Petroleum Co.'s No. 1 Gallman, NE cor. NW NE, Section 3-11-3w, was completed and produced through a 4-inch choke and made 2,175 bbls. of oil the first hour. Gas was estimated at 60,000,000 feet a day at the end of the first hour. The total depth of the well is 6,482 feet and the 9-inch casing was landed at 6,297 feet, the 13-inch casing was landed at 2,033 feet.

Operators committee of the Oklahoma City Field held several meetings during the week to discuss the allocation of pipe line runs in the field to insure every producer an outlet for his oil. A few changes were made.

It is estimated that at the present rate of production and shipments from the field under the present 120,000-bbl. a day allowable, something like 1,000,000 bbls. of oil will be added to the underage for the month of January. The daily allowable of the field may be reduced to meet the market demand which is believed will be about 100,000 bbls. per day for the next 90 days.

Another Petition

Several operators have asked the corporation commission for a change in the ruling classifying crude oil in storage as underrun and making the oil subject to the same rules and regulations as underproduced oil. The petition was presented by J. C. Shaffer, Inc., Denver Producing & Refining Co., Dengail Oil Co. and Heenan-Coe Co.

The petition refers to the proration order of January 1 and the emergency order of January 10, and states that because of the changes in classification of storage oil and the subsequent change in the allowable production of underage oil, the petitioners wells are now forced to shut in until the tankage is emptied.

The emergency order of January 10 increased the daily allowable on underage oil from one-half of 1 per cent to 1.15 per cent, during the month of January. Because of the oil in storage, which was legally produced under the proration orders existing during the month of December, wells now even with proration schedules cannot produce because the operators have no additional storage tanks.

The petition also claims that when the commission figured the total stocks in the field it did not take into consideration some 700,000 bbls. of oil that is required as tank bottoms, and that the incorporation of this unmarketable oil creates a fictitious total. The petition will be heard at the open session on January 26.

The corporation commission has postponed until January 29, a number of cases against Oklahoma City operators for alleged violations of proration rules. The cases postponed include that of Oils, Inc., the Marshall Oil Co., and the Tom Slick Oil Co. The cases were set for January 26 but because of the full docket, were postponed.

Plains Petroleum Co. asked for a postponement for a week or two of the hearing on their petition before the Corporation Commission for equal production allowables for the Oklahoma City Field and the Greater Seminole district. The petition will be given a hearing on January 26.

Officials of the Plains Petroleum Co. said that more time was needed to compile and assemble statistics and engineering information necessary in the case.

When the Oklahoma City allowable case is reopened on January 26, many

(Continued on Page 138)

WILDCAT OPERATIONS IN OKLAHOMA

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location—	Remarks:
Smith Brothers' No. 1 Forbes, SE cor. NW NW, Sec. 12-27-11w	S.D. 1,232 ft.
J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w	S.D. 5,502 ft.

ATOKA COUNTY

Campbell's No. 1 Baird, NW NE SW, Sec. 31-1-13	Rig.
Edgerton Edwards' No. 2 Rowland, SE NE NW Sec. 6-1-15	Rig.

BECKHAM COUNTY

Pattel Royalty's No. 1 Goose Tree, SW SE SW SE Sec. 32-10-23w	Rig.
Price-McFann's No. 1 Webster, C SW SW Sec. 34-8-26w	T.D. 2,344 ft.; plugged back to 1,890-1,900 ft.; 1,500,000 ft. gas
Mid-Continent's No. 1 Schaff, C NE SW Sec. 22-11-22w	Waiting on cmt. to set 430 ft.
Mid-Texas Co.'s No. 1 Sidell, NE cor. SW SW Sec. 17-2-22w	S.D. 3,550 ft.
White et al's No. 1 Green, SW cor. Sec. 34-10-24w	S.D. 3,575 ft.

BLAINE COUNTY

Washoma Oil Co. et al's No. 1 Phillips, C NW SW Sec. 13-18-10w	S.D. 5,115 ft.

CADDO COUNTY

Abernathy & Brown's No. 2 Houston, Sec. 24-6-13w	S.D. 1,115 ft.

CHEROKEE COUNTY

La Piere et al's No. 1 Woods, C SE SE Sec. 27-17-21	S.D. 1,604 ft.

COAL COUNTY

Radial Oil Co.'s No. 1 McGraw, NE NW Sec. 2-1s-8	S.D. 1,450 ft.
McCraw Oil Co.'s No. 1 Ward, NE SE, Sec. 35-1-8	Drlg. plug; showing 3,000,000 ft. gas 1,765-1,846 ft.; mudded off gas; S.D.; rig moved.
Whitney et al's No. 1 Miller, SE NE Sec. 10-2-8	S.D. 760 ft.

COMANCHE COUNTY

G. W. Stogner's No. 1 Doebel, C SW SW Sec. 3-3-9w	S.D. 1,450 ft.

GARFIELD COUNTY

E. L. Love et al's No. 1 White, SE cor. NW Sec. 9-24-6w	S.D. 5,850 ft.

GARVIN COUNTY

Malarnee et al's No. 1 Phillips, NE SW SE Sec. 34-3-2w	S.D. 4,830 ft.

GREER COUNTY

Dovell et al's No. 1 Capell, NW cor. Sec. 1-7-22w	5,000,000 ft. gas 1,455-65 ft T.D 1,760 ft.
French's No. 1 Murphy, SW NW Sec. 23-7-21w	S.D. 1,645 ft.

HASKELL COUNTY

Ault et al's No. 1 Harrison, CWL SE NE Sec. 14-9-19	S.D. 650 ft.
Ault et al's No. 1 Hall, NW SW SW, Sec. 14-9-19	S.D. 2,000 ft.
Ault et al's No. 1 Hall, SE NW, Sec. 26-19-9	S.D. 200 ft.
Holden's No. 1 Phillips, SE cor. Sec. 3-9-18e	S.D. 1,860 ft.
Marion Oil's No. 1 Sanders, NW NE NW, Sec. 10-9-18e	S.D. 2,387 ft.

KAY COUNTY

W. H. Atkinson et al's No. 1 Hayes, SE NE Sec. 24-28-3	Drlg. 1,800 ft.
Lewis et al's No. 1 Harris, SE NW Sec. 14-25-1	Location.
Mummert Drlg. Co. et al's No. 1 Cormick, C NW SE Sec. 9-27-2	S.D. 2,693 ft.
Blackwell Oil Co.'s No. 1 Harshman, Sec. 2-26-1w	Rig on ground.

KIOWA COUNTY

Christian's No. 1 Jones, NE SE Sec. 8-7-15w	S.D. 820 ft.

LATIMER COUNTY

F. English's No. 1 Unknown, NW SE, Sec. 16-6-19	S.D. 1,542 ft.

LE FLORE COUNTY

Dowd et al's No. 2 Thomas, SE NE, Sec. 16-3-22	S.D. 1,100 ft.

LINCOLN COUNTY

Hilton Phillip's No. 1 Phillips, SW NW, Sec. 2-14-3	Fishing 4,840 ft
Mote et al's No. 1 School Land, NW cor. Sec. 36-17-5	S.D. 1,160 ft.

McINTOSH COUNTY

Patterson et al's No. 1 Smith, SW cor. NW SE, Sec. 32-9-16	S.D. 5,902 ft; top Wilcox 5,443 ft.; top Silliceous 5,680 ft.

MURRAY COUNTY

Capitol Prod. Co.'s No. 1 Cutchall, SE NE, Sec. 6-1-2	S.D. 2,425 ft.

MUSKOGEE COUNTY

Sioux Oil Co.'s No. 1 Unknown, NW SE, Sec. 21-11-19	S.D. 1,011 ft.

OKFUSKEE COUNTY

Shepard et al's No. 1 Nevens, SE NW SW, Sec. 3-12-10	S.D. 2,638-90 ft.; Wilcox sand; hole full water.

OKLAHOMA COUNTY

Citizens Oil Co.'s No. 1 Sage Barber, NE cor. Sec. 21-11-3w	S.D. 1,200 ft.
L. C. Hivick's No. 1 Sunset Addition, NW SW NW, Sec. 17-11-3w	S.D. 5,515 ft.

PAWNEE COUNTY

Rockstool's No. 1 Wylie, NW NE SW, Sec. 6-20-5	S.D. 1,950 ft.

PITTSBURG COUNTY

Tape Oil Co.'s No. 1 Fulton, SE, Sec. 34-7-14	S.D. 1,200 ft.
J. Morrison's No. 1 Fowler, NE SE, Sec. 13-7-17	Rig.

(Continued on Page 135)

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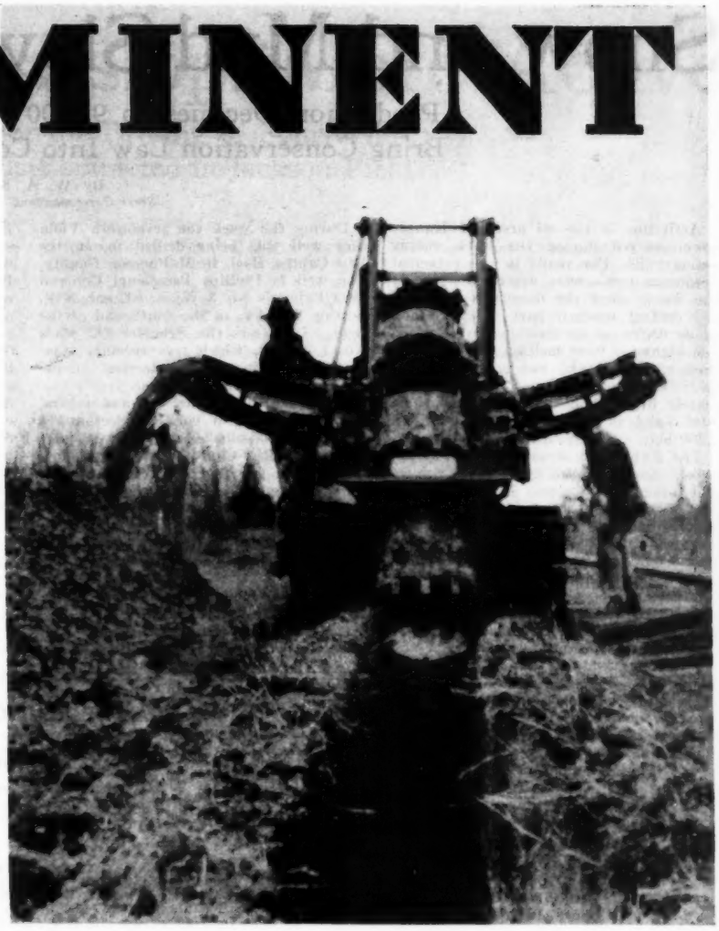

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The CLEVELAND BABY DIGGER

Snow and Mud Slow Up Kansas Fields

Production Declines to 97,700 Bbls. Per Day. Land Owners Bring Conservation Law Into Court. New Proration Orders

By W. A. Spinney
Staff Correspondent, Kansas Fields

Activities in the oil areas of Kansas were delayed during the week ending January 23. The roads in the principal producing areas were described as being the worst since the discovery of oil in the central western part of the State. Snow drifts on the east and west roads and highways were melting, leaving them deep with mud and gumbo. The State's daily average production was approximately 97,700 bbls. a day for the same week, and is a decline of more than 1,200 bbls. a day from the previous week.

The Kansas conservation law was attacked in a suit filed by William Schurr and other landowners. Plaintiffs state that the conservation law deprives landowners of their rights as citizens. The suit was filed in the Rice County District Court at Lyons. It is expected it will be heard in the next 60 days. The suit is based on the Fourteenth Amendment to the Constitution, which provides that private property cannot be confiscated without due process of law.

It is claimed that the law prevents landowners from selling oil, since the commission has made an order providing that not more than 15 per cent of the potential production of wells along the Barton or Ellsworth arch in Stafford, Rice, Barton and Ellsworth Counties, may be produced. The right of the State to limit the drilling of new wells is also questioned.

New Orders Issued

The Kansas Public Service Commission issued new orders placing the Eastborough and Voshell Pools under the supervision of Umpire Lloyd R. Pickrell. New proration rules were also announced for the same pools.

Both pools are to be prorated to the pipe line outlet, not to exceed 86 per cent of the potential production, based on the October and November averages. In the Eastborough Pool, in Sedgwick County, the order applies to wells completed on or after December 1, 1931. These wells are to be prorated on the basis of the October-November pipe line shipments of the respective leases of which they form a part, regardless of their present potential. Some producers claim the commission's rule in this respect penalizes all Eastborough operators who have drilled in new wells during the last 45 days.

All chat producing wells in the Eastborough Pool are exempt. Wells making 25 bbls. a day or less in the Voshell Pool, in McPherson County, are also exempt from the proration rule.

Purchasers making nominations to take oil from the pool were given the right to continue to run oil in accordance with their original nominations for six months.

Investigate Pipe Line Charges

Kansas Public Service Commission announced it would investigate the carrying charges of pipe line companies transporting oil in the State. An order was issued directing all companies to file with the commission within 10 days their interstate tariffs. A member of the commission stated that complaints had reached the regulatory body from several producers and refiners that pipe line charges were too high. The complaints were to the effect that the pipe line companies charge just as much for moving oil a short distance as they do for long hauls. Orders were issued calling for a hearing to be held in Wichita, February 9, to hear the complaints.

Another hearing will be held on February 9 on the question of whether or not an order should be issued limiting the further drilling of wells for oil in the Ritz-Canton-Decker area, "until such time as the natural gas has been exhausted in this area."

During the week the seventieth Viola lime well was being drilled in, in the Ritz-Canton Pool, in McPherson County. The well is Phillips Petroleum Co. and Tom Palmer's No. 3 Winn, SE cor. NW, Section 7-20-1w, in the south end of the field. It offsets the Schaffer Oil Co.'s No. 1 McGill, which was recently completed extending the production in the field a mile to the southeast.

Stanolind Oil & Gas Co. and others' No. 1 Johnson, NW cor. SE, Section 28-19-1w, a semiwildcat test, on the east side of the Ritz-Canton Field, was showing oil and gas from the chat. Casing was being landed on top of the chat. The chat was found at 2,943-73 feet.

Shell Petroleum Corp.'s No. 1 F. Johnson, in Section 35-19-3w, a wildcat in McPherson County, has resumed drilling operations after the rig was burned. About 750,000 feet of gas was found in the top of the chat at 2,984-94 feet.

Important Extension Well

An important extension well was showing oil from the Siliceous lime in the southwestern part of Ellsworth County. Adding another producing well to the Barton or Ellsworth arch, Allison-Fitzwilliam Petroleum Corp.'s No. 1 Stratman, C SW SE, Section 23-16-10w, is being estimated between 1,000 and 2,000 bbls. a day. The owners plan to make the first production test during the week, on the pump. The oil was found in the Siliceous lime at 3,388-91 feet.

The test is a wildcat located on an 80-acre tract and is about 1½ miles west of the Gypsy Oil Co. and others' discovery well. Before the test is completed the 6-inch casing will be cemented after which the well will be tubed and pumped.

Another wildcat test in Ellsworth County was logging favorably and is expected to reach the pay horizon soon. The test, J. R. Robertson and others' No. 1 Stratman, SE cor. SW, Section 1-17-10w, in the extreme southwestern part of the State, was landing 8-inch casing at 2,900 feet. The test is two locations north of the J. Aylward and others' discovery well in the area, which made 108 bbls. of oil an hour on a recent production test of 43 hours.

The oil production from some of the wells in southwestern Ellsworth County is being shipped by the Stanolind Crude Oil Purchasing Co. from its loading rack at Holyrood in tank cars.

Ellsworth Arch Tests

Considerable interest is being displayed in the new tests drilling along the Barton or Ellsworth arch. In the area surrounding Hilligoss and others' No. 1 Isern, in Section 12-20-11w, Barton County, Derby Oil Co.'s No. 1 Berscheidt, NW cor. NE SE, Section 12-20-11w, the direct offset to the discovery well, which made 1,100 bbls. a day, from the Siliceous lime, was showing only about 2,100 feet of oil in the hole in 36 hours, from the Siliceous lime at 3,289-3,323 feet. A core taken of the Siliceous lime before the test was drilled into the formation showed a good saturation. On a swabbing test the well made 7 bbls. of oil an hour. It was given a 15-quart shot and increased its production to 11 bbls. an hour. It was being drilled deeper and on the last report its total depth was 3,330 feet.

Midwest Exploration Co.'s No. 1 Berscheidt, C NW NW SW, Section 12-20-11w, was coring the Siliceous lime found from 3,293-98 feet, where a showing of oil was found. The casing is being landed on top of the lime where it will be cemented before drilling deeper.

Magnolia Petroleum Co.'s No. 1 Berscheidt, SW cor. NW, Section 7-20-10w, Rice County, has been delayed spudding on account of a fire that destroyed everything on the location except the steel derrick. The fire, of unknown origin, started about the same time rigging up was completed. The location is in the extreme western edge of Rice County, and the discovery well in the area is just over the county line in Barton County.

Goodrich Pool Development

The production from Sedgwick County declined about 1,000 bbls. a day during the week ending January 23. The drop is largely due to the curtailment in the Eastborough Pool.

The discovery well in the Goodrich Pool, in Sedgwick County, originally drilled to the chat formation by the Marland Oil Co., after the area had been core drilled and the acreage blocked in 1927, wil be deepened to the Simpson sand horizon. The well was completed about three years ago in December, 1928, flowing at the rate of 9,000 bbls. a day. It was shut in pending the erection of storage facilities on the lease. When opened again it failed to perform as formerly estimated. It made a pumper, producing 800 bbls. a day. The well is now Continental Oil Co.'s No. 1 Goodrich, SW cor. NE SW, Section 16-25-1, total depth 3,022 feet. Other tests in the area have been deepened to the Simpson sand with favorable results. The same company is also drilling No. 1 Brown, SE cor. NW SW, Section 15-25-1, at 650 feet, and No. 1 Smith, SW cor. NE SW, Section 16-25-1, at 700 feet. The same company's No. 1 Black, SW cor., Section 9-25-1, was abandoned with a hole full of water at a total depth of 3,585 feet. It failed to find production in any of the producing formations.

Ellsworth County

Vickers Petroleum Co. and others' No. 1 Stoltenberg, NW cor. NE NW Section 27-16-10w, is moving in.

Greenwood County

Theta Oil Co.'s No. 10 Fankhouser, NW

(Continued on Page 138)

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless marked otherwise)

Company, farm and location—	Remarks:
BARTON COUNTY	
Syndicate Oil Co.'s No. 1 Boretz, NW SE SE, Sec. 3-18-12w	U.R. 3,533 ft.
Skelton Oil Co.'s No. 1 Ott, C SE SE, Sec. 16-19-14w	S.O. 3,326-38 ft.; 3,384-10 ft. wtr. S.D. 3,375 ft.
McCool et al's No. 1 Teorn, NW SE NE, Sec. 13-20-11w	Show oil 3,313-39 ft.; pumped 600 bbls. per day.
DICKINSON COUNTY	
Severe et al's No. 1 Lavengood, NE SW, Sec. 13-13-2	S.D. 4,752 ft.
ELLSWORTH COUNTY	
R. Gear et al's No. 1 Sanberth, C SW SE, Sec. 29-16-9w	Shut down.
Alyward et al's No. 1 Stratman, SE NW SE, Sec. 1-17-10w	Siliceous 3,285-71 ft.; 117 bbls. 3 hrs.; shut in; estimated 2,000 bbls.; no pipe line connections.
Aladdin Pet.'s No. 1 Stoddenberg, C SW, Sec. 22-16-10w	Siliceous lime 3,332-47 ft; estimated 1,500 bbls. a day; shut in.
FINNEY COUNTY	
National Ref. Co.'s No. 1 Wells, C SW Sec. 13-22-30w	Drlg. 3,500 ft.
HARVEY COUNTY	
Liggett et al's No. 1 Davis, SW SE NE, Sec. 7-24-1	S.D. 2,500 ft.
KINGMAN COUNTY	
Skelly Oil Co.'s No. 1 Miles, NE cor. Sec. 30-27-10w	1,625-40 ft. 2,000,000 ft. gas; at 2,005-20 ft., 6,000,000 ft. gas; at 1,133-43 ft., 3,000,000 ft. gas; showing oil 3,385 ft.; T.D. 3,441 showing oil 3,385 ft; T.D. 3,504 ft.
Panhandle Drlg. Co.'s No. 1 Wetheral, C SE NW SW, Sec. 20-28-10w	Rig.
McPHERSON COUNTY	
Twin Drlg. Co.'s No. 1 Farver, SW SE, Sec. 16-20-1w	Drlg. 1,835 ft.
Shell Pet. Corp.'s No. 1 Johnson, SE SW SW, Sec. 25-19-3w	Top chat 2,984-94 ft; show gas; rig burned.
MORTON COUNTY	
Hydraulic Oil Co.'s No. 1 State Land, NW SE, Sec. 32-34-43w	T.D. 3,640 ft.; temp. abd.
MORRIS COUNTY	
Allender et al's No. 1 Wycoff, C SW SE, Sec. 5-17-7	S.D. 105 ft.
Urschel et al's No. 1 Bersuch, NW SE NW, Sec. 10-17-7	Fishing 915 ft.
Hankerson et al's No. 1 Cessman, SW SE, Sec. 24-16-9	S.D. 2,625 ft.
NORTON COUNTY	
Richards et al's No. 1 Colby, Sec. 17-4-21w	Rig.
OSAGE COUNTY	
Briggs & Smith's No. 1 Wood, SE NW, Sec. 21-14-15	S.O. 3,190-3,200 ft; S.D.
RAWLINS COUNTY	
J. G. Durham et al's No. 1 Weaver, SE cor. Sec. 3-2-35w	S.D. 3,935 ft.
RICE COUNTY	
Gypsy Oil Co.'s No. 1 Steckel, C NE NW, Sec. 31-19-10w	Spudding.
Cross et al's No. 1 Sharp, SE NE, Sec. 13-20-10w	Show oil 3,197-15 ft.; Siliceous at 3,320-35 ft.; estimated 1,500 bbls.; shut in.
RUSSELL COUNTY	
I. Brennan's No. 1 Waly, CNL E½ NW, Sec. 29-13-11w	Rig.
T. Palmer et al's No. 1 Pasek, C SE, Sec. 3-14-11w	Fishing 560 ft.
RUSH COUNTY	
Dewey & Mitchell's No. 1 Greenawalt, C SW, Sec. 17-15-16w	Show of oil in Conglomerate 3,225-30 ft.; plugged back to 3,125-40 ft; estimated 150 bbls.; completed.
Skelton et al's No. 1 Brock-Hartman, SW SE NE Sec. 4-18-16w	Spudding.
SALINE COUNTY	
Twin Mounds Oil Co.'s No. 1 Weis, C W½ NE NW, Sec. 20-13-4w	S.D. 3,710 ft.
SHERIDAN COUNTY	
Flo et al's No. 1 Shoemaker, SE SW, Sec. 27-7-26w	4,040-45 ft; wtr.; fishing.
STAFFORD COUNTY	
Rosenthal, Stanolind and Amerada's No. 1 Gray, C NE, Sec. 11-24-13w	S.O. 3,329 ft.; shut down 3,935 ft.; 500 ft. oil in hole.
STEVENS COUNTY	
Argus Prod.'s No. 2 Christopher, C NE, Sec. 10-33-39w	S.D. 5,521 ft.
SUMNER COUNTY	
Trees Oil Co. and Shell's No. 1 Springate, NE SE SW, Sec. 6-34-2	S.D. 3,560 ft.
Spencer et al's No. 1 Penwell, NW SE NE, Sec. 16-3-3	Wtr. 4,480-4,515 ft; abd.
WASHINGTON COUNTY	
Sinnex et al's No. 1 Penwell, NW SE NE, Sec. 16-3-3	S.D. 1,730 ft.

Arkansas and Mississippi More Active

Blocks Being Assembled for the Drilling of Four Wildcats. Two Good Gas Wells Completed in Jackson Field

By J. R. Crumpton
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Jan. 25.—The announcement during the past week of four rank wildcats to be drilled on large blocks, two of which are in Arkansas and two in Mississippi, gives an indication of activities in these districts of the division during 1932. In Howard County, Arkansas, R. D. Ullon of California is assembling a large block 1½ miles southeast of Mineral Springs. The acreage is being assembled around the southwest portion of Township 10s, Range 27w. The plan is to block 20,000 acres in this vicinity, 5,000 acres of which is already signed up. The contract calls for a 3,000-foot test to begin not later than March 1, and the leases are for five years with $1 per acre renewals. Another wildcat venture in Arkansas has been started by R. C. McIntosh of Tulsa, who is blocking 12,000 acres in Yell County, near the town of Plain View. It is understood that this operator is primarily interested in the development of a gas area in that section.

In Hinds County, Mississippi, the Mississippi-Minnesota Oil Co. has derrick up for a test on a 5,000-acre block obtained from the Edwards Land Co. The wildcat is in the western part of the county, 1½ miles north of the town of Edwards near the Warren County line, and between Vicksburg and Jackson. The United Gas Public Service. has made location to drill its No. 1 Lenhart, Section 14-14n-6w, in Sharkey County, Mississippi. This test is located on a large block, originally assembled several years ago by J. P. Evans of Shreveport, and which later had a geophysical survey with encouraging indications.

Three Producers Finished

Two good gas wells in the Jackson Field of Mississippi, and a small pumper in the Zwolle Field of Sabine Parish, North Louisiana, comprised the successful completions in this division during the past week. In addition to these, there was one dry hole and three abandoned locations. Both of the Jackson gassers were in the Rankin County area on the east side of Pearl River and in close proximity to previous production. James Alexander, Trustee's No. 1 Hurst, in the northeast corner of Section 12-5n-1e, had an initial estimated flow of 50,000,000 feet from 2,348 feet. The new well is the fartherest northern producer of this hot spot in Section 12, and extends the proven area along a narrow northeastern strip about one-half mile in that direction. Only a small portion of Section 11-5n-1e is in Rankin County, the main body of this section being in Hinds County on the west side of Pearl River. Anderson and others' No. 1 Casey & Wellon, located in the southeast corner of the Rankin area of Section 5, was completed with an estimated initial flow of 40,000,000 feet of dry gas from a total depth of 2,403 feet. There are producing gassers to the west and north of it in the Hinds County area.

The oil producer in the Zwolle Field, H. W. Perritt's No. 6 Bowman-Hicks, Section 2-7-12, was completed as a 20-bbls. pumper from 2,317 feet. This area reported the only dry hole for finished tests in the division, the Gerhig Oil Co.'s No. 1 Skinner, Section 16-8-11, encountered salt water and was abandoned at 2,842 feet, after penetrating the base of the chalk at 2,780 feet. This test was a wildcat, several miles northeast of production, and was drilled on a block of over 600 acres recently acquired by this company.

There were two abandoned locations in the division and another test abandoned after drilling to a shallow depth. The Roberts Oil Co. will not drill its No. 1 Russell, Section 25-12-29, in Little River County, Arkansas, and F. E. Stewart abandoned his location for No. 1 Mississippi Cotton Seed Products Co., Section 4-5n-1e, west of the productive area in Hinds County, Mississippi. In the same county, the Howard Oil Co., after drilling 340 feet on its No. 1 Jackson College, Section 9-5-1e, southwest of the Jackson Field, abandoned the test. The well was spudded in in December, 1930, and has been inactive during most of last year.

Sabine Parish Test Interesting

In Bossier Parish, H. I. Morgan's No. 1 Smith, Section 22-19-11, which tested 25,000,000 feet of gas last week on drill stem test, was gauged during the past week with an initial daily flow of 17,000,000 feet from a total depth of 1,770 feet. The well is located on a small high dome of the Trinity horizon about 2 miles southeast of the Bellevue Field which produced from 300 to 400 feet from the Nacatoch sand.

A development of interest in the western part of the Zwolle Field, Sabine Parish, is the showing obtained during the past week in the Coates Petroleum Co.'s No. 1 Parie, Section 2-7-13. This test developed several million feet of gas with a good spray of oil after drilling plug from 6-inch casing set at 2,066 feet. If it makes the producer as indicated, this part of the field will be extended one-half mile west, but there is small encouragement for very much farther extension as Smitherman & Grigsby's No. 1 Martinez, one-fourth mile west of the new test, was abandoned last week in salt water at a total depth of 2,520 feet. Other tests in Zwolle area, especially two wells drilling below the chalk horizon, are being closely followed. R. L. Gay, Trustee's No. 1-A Long Bell Lumber Co., Section 10-8-13, is coring lime at 4,451 feet. This is a wildcat several miles northwest of the field, toward the town of Noble, and is reported to getting encouraging results from formations, believed to be in the upper Trinity horizon. Another deep test within the proven lines of the field is the Loring Oil Co.'s No. 18 Bowman-Hicks, Section 15-7-12. The operators have pumped in 1,000 sacks of cement at 4,300 feet to cut off salt water coming from 33 feet of salt water sand from 4,300 to 4,333 feet. A good gas show developed in this test after penetrating cap rock from 4,371-75 feet. The total depth of the hole is 4,428 feet, and a test will probably be made during the week if the efforts to cut off the salt water are successful. The Zwolle area is getting a good play as reflected by the new locations staked during the past week. The southeastern and far western extensions which have recently furnished several good wells from the marl and chalk, are the most active areas.

Gas in East Texas

Reports from Harry Elliott's No. 1 Pickering Lumber Co., G. H. Patterson Survey, northeastern Shelby County in East Texas, state that a good show of gas and oil has been encountered from 1,450-95 feet. The gas is reported to be coming from 2 feet of hard formation, classed as chalk rock, and the operators are arranging to set 6-inch casing about 7 feet off bottom and make a thorough test. The wildcat is south of Joaquin, and a few miles southwest of E. L. Chapman's No. 1 Pickering Lumber Co. in the C. E. Henry Survey, which was completed as a 10,000,000-foot gasser from 3,864 feet during last year.

The Gulf Refining Co. has also met with some success in this vicinity, completing one well which pumped about 40 bbls. daily for several years. The Gulf's test was east of the present wildcat. This is practically the only active wildcat in the East Texas counties at the present time, all of the others being shut down for various reasons. In the Bethany Field of Panola County, the Natural Gas Production Co. is drilling at 3,000 feet on its No. 3 Mays, Jane Thorpe Survey. Two miles east of the Trinity gas wells of this field, the United Gas Public Service Co. has plugged back on its No. 11 Werner, D. B. Lewis Survey, after reaching a total depth of 5,848 feet without results. With the hole plugged at 3,650 feet, operators are testing with a small show of gas and some salt water at 3,665 feet. Two wildcats in that county are temporarily shut down. G. A. Davidson's No. 1 Latham, William Rich Survey, has drilled to 2,334 feet with the base of the chalk reported at 2,090 feet. J. L. Nelson and others' No. 1 Williams, James Hanks Survey, reports the base of the Pecan Gap at 2,505 feet with a total depth of 3,055 feet in lime and shale.

In Little River County, Arkansas, Stephens and others' No. 1 Dierke Lumber Co. seems to be checking high with the top of the anhydrites encountered at 2,217 feet and the base at 2,301 feet. The test is coring water sand at 2,818 feet. In Union County, H. H. Helms' No. 1 Berry Davis, Section 31-16-14, is drilling in shale at 1,550 feet. This is a semi-wildcat located on a 1,000-acre block several miles from proven production.

Daily Average Runs

There was a daily average increase of 395 bbls. in the runs from the fields of North Louisiana and Arkansas during the past week. The daily average runs from the several pools were:

NORTH LOUISIANA

Caddo light	5,320
Caddo heavy	1,700
Cotton Valley	510
DeSoto and Red River	2,070
Elm Grove	335
Haynesville	5,010
Holly	350
Homer	2,850
Pleasant Hill	345
Sarepta-Carterville	820
Urania	3,220
Zwolle	6,500
Total North Louisiana	29,030
Total previous week	28,710
Increase	320

ARKANSAS

Champagnolle	1,900
El Dorado	3,120
Lisbon	560
Nevada	1,210
Smackover light	2,950
Smackover heavy	23,650
Stephens	660
Urbana	275
Total Arkansas	34,325
Total previous week	34,250
Increase	75
Total both states	63,355
Total previous week	62,960
Increase	395

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

AVOYELLES PARISH

Company, farm and location—	Remarks:
Stauffer & Eshleman's No. 1 Caruth, Sec. 40-1n-7e	Derrick.

BOSSIER PARISH

Andrews & Davlin's No. 1 Nattin, 100 ft. N, 250 ft. W, C, Sec. 15-22-14	W.O.S.R. 2,890 ft.
Dr. W. N. Hankin's No. 1 Newell, 300 ft. S and W, NE cor., Sec. 12-19-11	S.D. 1,775 ft. for fuel.
H. I. Morgan's No. 1 Smith, Sec. 22-19-11, 1,520 ft. N, 400 ft. W, SE cor.	Completed for 17,000,000 ft. gas 1,770 ft.

CADDO PARISH

Calatex O. & G. Co.'s No. 1 W. B. Hudson, Sec. 8-16-16, 2,640 ft. E, 2,865 ft. NW cor., Sec.	Location.
Louana O. & G. Co.'s No. 1 Hammock, Sec. 32-19-6, 660 ft. N and W, SE cor.	Rigging up.

CALDWELL PARISH

Carter Bell's No. 1 Taylor, 150 ft. S, 150 ft. E, NW cor. NE SE, Sec. 17-14-4	S.D. 110 ft.
Hudson et al's No. 1 Burton, Sec. 35-12-2e	S.D. 2,950 ft.

CATAHOULA PARISH

National Drlg. Co.'s No. 1 Marsh McMiller, 70 ft. N, 100 ft. W, C, Sec. 26-9-6	T.A. 3,097 ft.

DE SOTO PARISH

E. T. Oakes' No. 1 R. H. Bryant et al, 200 ft. N and W. SE cor. NE NW, Sec. 30-13-15	Drlg. lime 3,052 ft.

(Continued on Page 130)

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

CADDO PARISH—PINE ISLAND

Company, farm and location—	Remarks:
Shreveport Oil Corp.'s No. 2-B Muslow, 1,000 ft. S, 300 ft. E, NW cor., Sec. 32-21-15	S.D. 2,135 ft.
Simplex Oil Co.'s No. 1 Youree-Glassell, 500 ft. N and E, C, Sec. 13-20-15	S.D. 2,275 ft.

MOREHOUSE PARISH

Southern Carbon Co.'s No. 57 fee, Sec. 9-20-4e, 660 ft. N, 1,317 ft. E, SW cor.	Rigging up.

OUACHITA PARISH

Carbon Cons.' No. 7 Guthrie, Sec. 50-20n-4e, 5,263 ft. N, 7,475 ft. W of cors. of Secs. 25, 26 and 49, in Sec. 50	Location.

RICHLAND PARISH

United Gas Public Service Co.'s No. 1-B Alice Purvis, Sec. 34-17-6, 81 ft. N, 599 ft. W, of center of Sec.	Set 13-in. 185 ft.

SABINE PARISH—ZWOLLE

Pelican Nat. Gas Co.'s No. 11 La. Long Leaf Lbr. Co., Sec. 10-7-11, 330 ft. N and W, SE cor. NE NW	1,000 ft. oil in hole 2,592 ft.
Smith et al's No. 1 Hale, Sec. 1-7-13, 330 ft. S and W, NE cor. NW SE	W.O.S.R. 2,055 ft.
A. F. Tarver's No. 2 Cutrer, Sec. 12-7-11, 330 ft. S and W, NE cor. NW NW	W.O.S.R. 2,550 ft.
O. J. Baird's No. 1 Duggan, Sec. 14-7-11, 328 ft. S, 648 ft. E, from C of Sec.	S.D. 2,545 ft.
Ray Baker's No. 1 Sabine Lbr. Co., Sec. 1-7-12	W.O.S.R. 2,548 ft.

(Continued on Page 131)

Kerr County Test Rather Disappointing

No. 2 Love Bailed 60 Per Cent Oil and 40 Per Cent Water. Will Case to Bottom and Drill Deeper. New Tests Starting

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Jan. 25.—Evans & Gant's No. 2 Love, in western Kerr County, which made a good showing at first with the oil rising in the hole, did not look so good later. With casing run in the hole to 80 feet off the bottom, the well bailed 60 per cent water and 40 per cent oil. The casing could not be got to the bottom but there seemed to be conviction that the water was from the bottom of the hole. Tools were run into and the hole drilled about 10 feet deeper and steel line measure showed it 5,849 feet. The casing is being pulled and the perforated liner will be removed and the casing run back in with a shoe and run to the bottom to shut out the water and the hole will then be carried deeper.

There is still some question about the formation. Some believe the well topped the Mississippian at about 5,540 feet and is not in the Ellenberger though at least one paleontologist is convinced that it is Ellenberger below 5,600 feet. They are still collaborating on the proposition. It is claimed there was some Mississippian in the old Transcontinental Oil Co. or Benedum & Trees' No. 1 Peterson in the northeastern part of Edwards County about 25 miles from the Love test. It produced 500,000 or more feet of gas.

The Love test is a cable tool job and the formations are determined from cuttings which gives opportunity for some arugment but at 5,540 feet the cuttings are black. A little below that the cuttings are mingled with some lighter colored lime and at 5,600 feet the cuttings are white or gray. From 5,600 feet at least most of them are carrying it seemingly as Ellenberger. The sand was encountered at 5,835 feet.

The hole is cased with 6⅝-inch to 3,260 feet and it would not seem this would give much opportunity for a shoe on the 5⅜-inch. Regardless of the outcome the test is one of the most important to the industry in all Southwest Texas as furnishing valuable information.

The Phillips Petroleum Co.'s No. 2 Holman, in northwestern Edwards County, that went to 8,230 feet and didn't get out of the Pennsylvanian formation, is about 60 miles northwest of No. 2 Love and on a line with the Transcontinental Oil Co.'s No. 1 Peterson.

Guadalupe County Test

M. W. Eister's No. 1 Wells, in southwestern Guadalupe County, is hitting the formations high and interest in the test is rising correspondingly. Last Friday it was in the Georgetown topped at 3,760 feet and should be in the Edwards by the time this story is being read. With an elevation of 541 feet the Eiser well topped the chalk at 3,445 feet, the Eagleford at 3,620 feet, Buda at 3,648 feet and Georgetown at 3,760 feet.

The data are worked out in comparison with the two tests on the Wells ranch drilled by the Grayburg Oil Co., the No. 1 Wells being about 2,200 feet southeast of the Eiser test and the No. 2 Wells about 3,500 feet southeast. The comparison on the chalk of the three wells is as follows:

	Elevation	Top chalk	Subsea top chalk
No. 1 Eiser ...	541	3,445	—2,904
No. 1 Grayburg	510	3,495	—2,985
No. 2 Grayburg	470	3,556	—3,086

The Eiser well went out of the chalk at 3,618 feet and seems to have had a thinner slice of the chalk that was present in the Grayburg wells and this is said to account for its running around 130 feet higher than the No. 1 Grayburg on the formations below the chalk.

At any rate the well is running high and since it topped the chalk there has been a great deal of activity along the trend of the supposed structure to the northeast where some leases have been taken. Royalty has been in demand and the test has been watched closely.

Pettus Developing

In the Pettus Field, two tests were waiting for cement to set before drilling in and another was far advanced in drilling at the week-end. Buck Oil Corp.'s No. 2 Ray, a south offset to The Texas Company's No. 1 Gremmel was completed over the previous week-end and made a 750-bbl. well, total depth 3,913 feet, and the last week-end Slick-Seeligson, Inc., were down 3,892 feet topping the sand at 3,884 feet with casing set and waiting for cement, an east offset to The Texas Company's No. 1 Gremmel.

Two other tests are in order of watching now at both ends of the field. McMurray's No. 1 Ray (carried by some as C.R.&M.'s No. 1 Ray), the farthest test in the field, was down around 3,000 feet Sunday and should be on the sand by the end of this week if not before. It is about three locations west of production and if it comes in a producer means an extension to the field.

On the east end of the field, Houston Oil Co.'s No. 3 Portis is down on the sand with total depth 3,914 feet and with casing set and should be ready to complete by the end of this week. On drill stem test it looked like an oil well and will mean a one location extension to the east and will to that extent close up the gap between this Damac extension and the Pettus townsite production.

A few miles south of the Pettus Pool the Nichols' No. 2 Hicks in the Normanna Field, a field of two wells, one in a 2,000-foot sand and the other, the No. 2 Hicks at 3,641 feet, has been cleaned out. It came in a big gas well making a little oil, around 30 bbs. It has been brought back for about 75 bbls. and a volume of gas estimated at 20,000,000 feet. A small strong of tubing was run inside of the 2½-inch tubing. No attempt has been made to develop this field and drill additional tests, though the first two wells were completed more than a year ago.

Slick Pool Operations

Slick Pool on the DeWitt-Goliad line, 15 miles northeast of Pettus, is about to get its third well and a considerable extension to the northeast. Simms and others' No. 1 Stopkey late last week was down 4,100 feet and drilling, and it was at 4,212 feet that Slick brought in his discovery well in the field. One other producer and one dry hole have since been completed and the Simms test is the fourth to be drilled. The discovery well is making around 500 bbls. of very high gravity oil a day which is being sold to refineries and to farmers to use in tractors.

Miscellaneous

The lower Rio Grande Valley continues to attract considerable interest and more shallow wells are being completed. Also Rio Oil & Gas Co. has contracted for five additional wells to be drilled in Starr County in the Los Olmos Pool. The Rio Oil & Gas Co.'s No. 1 Kelsey-Bass completed at 444 feet made a 45-bbl. pumper. It was completed the past week. It is expected to drop off to pump about 30 bbls. in a few weeks. A test 300 feet east of it came in three months ago pumping 31 bbls. and is now pumping 27 bbls. daily from the same sand. The best well completed in the field thus far seems to be the Los Olmos Oil & Gas Co.'s No. 8 Kelsey-Bass, which has been completed for an initial production of 75 bbls. a day from the same sand.

These wells are so inexpensive to drill that the field promises to be a very important one provided it extends over enough acreage. It has not as yet been proven out and there are relatively only a few wells completed and a few of them are gas wells.

In northeastern Zapata County, Lowe & Rogers have started to deepen their No. 2 Prudencia Benavides, which was completed the last of December as a gas well at 1,454 feet in a new territory a couple of miles northwest of the old Mirando Valley Pool, where they have one other well. The No. 3, after being deepened slightly, began showing oil but not enough at last reports to be of extreme importance, but interesting because in wildcat territory so far as oil production is concerned.

In western Bexar County, two shallow tests have been getting some attention. J. E. Anderson's No. 1 Suburban Farms in the Logan Survey was shot at 1,120-80 feet and then cleaned out, but is now shut down due to leases but showing some gas up through the drilling fluid. It was dry in the Edwards at 1,773 feet.

The other is the Amsden-Ingersoll-Miller's No. 1 Strumberg, 12 miles southwest of San Antonio and due north of the town of Somerset. At 470 feet it is showing some gas and is setting 8¼-inch casing. This is one of several tests drilled by these or kindred interests in that area to prove out a structure and the Tri-State's No. 1 Carruth, a shallow test, is now standing but flowing a little oil over the top of the casing. The operators will probably endeavor to develop the shallow stuff to some extent before attempting an Edwards lime test though the No. 1 Strumberg will likely go to the Edwards if it doesn't get shallow production.

Some more wildcatting is being done in northeastern Duval and northwestern Jim Wells. Gulf Production Co. has moved in and is down 2,000 feet in its No. 5 Shaeffer in Survey 89, 1½ miles north and slightly west of the Carsil Oil & Gas Co.'s gas well in the Baldwin Survey on the McGill land. Gulf owns an enormous block in that part of the country extending all over the northwestern part of Jim Wells County.

To the west of that, Wolcott & Rehmet of Alice have completed a block and are getting ready to drill on it. The block includes about 5,000 acres.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Company, farm and location—	Remarks:
American Central Oil Co.'s No. 3 Mary McConnell, 150 ft. W of E line, 300 ft. S of No. 1, Blk. 138, W. C. M. Baker Sur., 3 miles W and ½ mile S from Somerset	T.D. 1,635 ft.; drlg.
Glen Mathis' No. 2 Mrs. C. Martin, 100 ft. SE of No. 1	T.D. 2,980 ft.; S.D.

BLANCO COUNTY

Hardy-Sitton's No. 1 McMillan	T.D. 602 ft.; S.D.
Theo. Hicks' No. 1 Specht, 1,500 ft. from S line, 500 ft. from W line of farm, in Thomas M. Fowler Sur. No. 37 in extreme south point of county	T.D. 1,650 ft.; S.D.
Liles Adams et al's No. 1 Luders, 150 ft. to S line, 1,420 ft. to E line of James Stanford's No. 155	T.D. 1,100 ft.; standing.

BASTROP COUNTY

E. R. Mart's No. 2 Wm. Bahn, 2,000 ft. from E line, 1,300 ft. from S line of farm in James Sandifer Sur.	Skidding derrick from No. 1 Bahn.
Sun Oil Co.-Humble Oil & Ref. Co.'s No. 1 Powers, 400 ft. to N and E lines of Blk. 197, Bastrop town tracts	T.D. 2,270 ft.; drlg.
Texas Dev. Co.'s No. 1 C. H. Ray, 800 ft. from W line and 400 ft. from S line of farm, in Thos. Christian Sur.	T.D. 2,635 ft.; drlg.

BELL COUNTY

Bridwell et al's No. 1 Nichols, 150 ft. to W and N lines of farm, N. Roberts Sur.	T.D. 425 ft.
Bridwell et al's No. 1 G. A. White, 550 ft. to E line, 150 ft. to S line of farm, Nancy Roberts Sur., 4 miles SE from Belton	T.D. 527 ft.; drlg.
W. A. Klecka's No. 1 W. W. Thornton, 500 ft. from N line, 1,968 ft. from E line of tract in R. Roberts Sur.	Location.
J. W. Riley's No. 1 W. S. Chaffin, in M. Griffin Sur.	T.D. 365 ft.; S.D.
Jas. Scroggins' No. 2 Warrick, Ingram Sur.	T.D. 1,432 ft.; S.D.

(Continued on Page 132)

SOUTHWEST TEXAS PROVEN AREAS

ECKERT POOL—BEXAR COUNTY

Company, farm and location—	Remarks:
Williams et al's No. 2 Strunk, Juan Montes Sur.	Rigging up.

NORMANNA POOL—BEE COUNTY

C. F. Nichols' No. 1 Hicks	T.D. 1,992 ft.; rigging to deepen.

PETTUS POOL—BEE COUNTY

Buck Oil Corp.'s No. 2 Ray, 638 ft. from E line, 150 ft. from N line of lease, S offset to Texas No. 1 Gremmel	T.D. 3,913 ft.; swabbing.
C.R.&M. Drilling Co. and H. H. Weinert's No. 1 Ray, 150 ft. from N and E lines of lease in J. W. Williamson Sur.	T.D. 2,260 ft.; drlg.
J. M. Davis et al's No. 1-B Ray, 150 ft. to N and E lines of 10-ac. lease, next south of Weinter's, John W. Williamson Sur.	Rigging up.
Houston Oil Co.'s No. 3 Portis, 300 ft. E of No. 2, A. Smalley Sur.	3,914 ft.; set csg.
J. L. Mauldin's No. 2 fee	Making location.
Slick-Seeligson, Inc.'s No. 3 Ray, 150 ft. from S and W lines of George A. Kerr Sur.	T.D. 3,886 ft.; set csg.
Slick-Seeligson, Inc.'s No. 4 Ray, N offset to Houston Oil Co.'s No. 3 Pettus	Location.
The Texas Company's No. 2 Gremmel, 300 ft. W of No. 1 Gremmel	T.D. 1,100 ft.; drlg.
The Texas Company's No. 3 Gremmel, N offset to McMurray's No. 1 Ray	Set surface csg.
The Texas Company's No. 4 Gremmel	Making location.
The Texas Company's No. 5 Gremmel	Making location.

COOKSEY POOL—BEXAR COUNTY

Chiquita Oil Co.'s No. 3 Cooksey, 480 ft. from E line, 330 ft. from S line of tract in J. W. Rialls Sur.	Location.

(Continued on Page 132)

BIG COOPER-BESSEMERS on another long line

TYPE 22's

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ABILENE KANSAS

PIPE LINE

MULLINVILLE KANSAS

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AND

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Two New Sands in Gulf Coast Area

Shallow Production Found at Lost Lake, Northern Chambers County, and Deep Sand at Sweet Lake, Cameron Parish, Louisiana

By Nell Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Jan. 25.—Lost Lake and Sweet Lake, both of which fields are owned entirely by the Pure Oil Co., are giving promise of important developments with the testing of new sands which have shown for good production. At the former a saturated sand at a shallow depth has been encountered while at the other a new sand, the deepest of any in the field, has been found, and if it makes a well it will be the deepest producing sand on the Gulf Coast.

The shallow sand at Lost Lake, northern Chambers County, is in Pure Oil Co.'s No. 14 Mayes at 1,812-73 feet on which a string of 9⅝-inch casing has been cemented with 9⅝-inch screen on bottom preparatory to testing. From 1,812 to 1,831 feet the sand is broken but from there to bottom it is solid and showing heavily of oil, giving indications of making a good well. With the exception of the discovery well, No. 1 Mayes, which was a gasser at 2,071 feet but which was later deepened to the lower sand, all production at Lost Lake has been in a 2,800-foot horizon. The new sand has been encountered in several of the other wells but has not shown for commercial production before.

Nine producing wells have been completed at Lost Lake to date although this production has been somewhat disappointing and at present the daily average is only around 200 bbls. No. 14 Mayes is the farthest east well, being 650 feet due east of No. 11. That the shallow sand, in which it now is set, will prove a more prolific producer than the 2,800-foot horizon is the belief of operators.

Lost Lake, a geophysically discovered salt dome, was opened for production in March, 1929, but it was not until August of the same year that the first oil production was tapped. Present production is in sands overlying the top of the dome, cap rock of which is around 4,100 feet. The dome, however, has been proved one of the largest known on the Gulf Coast. Deep tests drilled well out to the west and to the north in search of flank sands have failed to get off the dome.

Sweet Lake Deep Sand

The deep sand at Sweet Lake, Cameron Parish, Louisiana, was encountered by Pure Oil Co.'s No. 5 Yount Lee Oil Co., which at a total depth of 7,456 feet is standing with 5-inch casing cemented at 7,416 feet. This test cored sandy shale showing oil at 7,441-42 feet, sticky shale showing oil at 7,442-44 feet and sand from 7,444 to the present total depth. A good well is anticipated.

At 7,456 feet, this sand exceeds the depth from which Pure's No. 10 is producing, that horizon being at 7,366-87 feet. No. 10, the present deepest well in the field, was completed last August flowing 1,350 bbls. daily through chokes. No. 5 is a former producer in a sand at 5,660 feet. It was deepened in expectation of finding the deep sand in which No. 10 was brought in.

The depth of No. 5 also surpasses that of the deepest producing well yet completed on the Gulf Coast. That well was Yount Lee Oil Co.'s No. 7 Housierre-Latrielle, which was one of three deep producers completed southeast of the old Jennings (Evangeline) Field, Acadia Parish, Louisiana. The total depth of Yount Lee Oil Co.'s Jennings well was 7,447 feet, or 9 feet shallower than the Sweet Lake well.

Sweet Lake has been a field of deep production. The discovery well, No. 3, completed in October, 1926, was in sand at a total depth of 5,897 feet and at that time was the deepest producing well on the coast. Three wells, since then, have been completed in shallower sands, the shallowest being at 4,475 feet, but these proved short-lived and were deepened. A total of seven producers have been completed with the deeper wells being consistent producers, particularly No. 9 in a sand at 6,813 feet and No. 10 at 7,387 feet.

All these wells are in one small group located in Sweet Lake, a large inland body of water. Although it is possible that the field may overlie a salt dome, as yet the existence of a salt dome there has not been proved, either geophysically or by the drill. Thus Sweet Lake is one of the few nonsalt dome fields of the coast, along with Orange and Goose Creek.

Barbers Hill

The addition of two good wells at Barbers Hill the past week substantially boosted that field's flush production. On the northeast flank of the dome Texas Gulf Producing Co.'s No. 1 J. M. Fitzgerald, flowing 2,160 bbls. of pipe line oil, pinched in, helped to fill in one of the few remaining gaps in the almost continuous line of deep production around the dome. It is an important link in the production on the north and that on the east which are steadily being brought together.

On the extreme southeast side of the dome, Mills Bennett Production Co.'s No. 5 Gulf Fisher, came in flowing 2,000 bbls. daily on chokes from the shallower Miocene sand at 4,378-4,407 feet. Development of this sand just underlying the salt overhang is the center of an active play at this time on the east side of the dome.

While drilling continued active in this play there were no new developments the past week. One additional location was made at Barbers Hill, but this was Texas Gulf Producing Co.'s No. 1 Scott-Fitzgerald, an offset to No. 1 J. M. Fitzgerald, and located between the latter and No. 1 Morgan-Fitzgerald, completed recently. These are in the deep Oligocene sand line of production. Gulf Production Co. and McAlbert Oil Co. have completed rigging up and now are starting drilling in their respective offsets to Mills Bennett Production Co.'s No. 6 Wilburn, which recently opened Oligocene sand production high up on the dome under the salt on the east side.

On the west flank, Rio Bravo Oil Co. is preparing to test a shallow sand showing oil at 3,338-48 feet in its No. 2 Fisher. This well is a former producer in the present producing horizon at 5,300-5,400 feet in that area. Total depth of the old hole was 5,390 feet, at which level the well was pumped for 60 bbls. daily, but that hole was sidetracked at 2,384 feet and in the new hole found the shallow sand.

Pierce Junction

Possibilities of an important extension eastward of production on the south flank of Pierce Junction, Harris County, are seen with the testing of Humble Oil & Refining Co.'s No. 1 C. G. Hooks, which is in sand showing oil at 3,884-94 feet. This well is approximately 600 feet east of Gulf Production Co.'s No. 33 Taylor in a one-well line of production which is being moved steadily eastward toward a meeting point with production on the east flank.

Port Barre and Lake Barre

Gulf Refining Co. is preparing to resume development at Port Barre, St. Landry Parish, Louisiana, in a test which is obligated to be started by February 9. Location of this, No. 1 Wilson & Cochran, already has been made in Section 4-6s-5e. The location, which is approximately 1,200 feet east of The Texas Company's No. 5 Botney Bay, is 100 feet out of the middle southwest corner of the tract. All drilling on this dome has been suspended since last summer.

At Lake Barre, Terrebonne Parish, The Texas Company's No. 1 L.L.&E., which was completed January 11 flowing 600 bbls. in sand at 3,688-3,722 feet but which quickly dropped off, has been killed and will be deepened in view of bettering its flow.

Victoria County

Bunte and associates' No. 1 Keeran, wildcat in the Martin DeLeon Survey, in southeastern Victoria County, which is in sand showing oil and gas at 5,182-91 feet, still is waiting a screen test. At latest report, operators were running 6⅝-inch casing. A drill stem test was made three weeks ago which showed gas with a pressure of 750 pounds through a quarter-inch choke.

Walker County

A drill stem test showing of gas also was made the past week in another wildcat, Hart Oil Co.'s No. 1 Thompson, Jose Ortega Survey, 10 miles north of Huntsville, Walker County. A 45-minute test was made in a sandy shale at 1,828-32 feet. A 1¼-inch choke was used. Estimates of the volume are uncertain.

Rabbs Ridge

At Rabbs Ridge (Clear Lake or Thompson), Cullen & West and Gulf Production Co. are preparing to start up on another deep test, which if completed as a well, will extend production of the south end of the field 1,000 feet east. This test will be No. 3 George, 1,000 feet due east of No. 2. Two other tests now are drilling in this field, including Gulf Production Co.'s No. 2 Mary Booth Meyers on the extreme north end and Cullen & West and Gulf Production Co.'s No. 1-B Lockwood & Sharp, a former 3,500-foot well, which is being deepened to the more recently opened deep sand at 5,100-5,200 feet.

Among newly reported completions on the coast are Moody-Seagraves Producing Co.'s No. 2-A St. John, Refugio, and Rio Bravo Oil Co.'s No. 126-A Cotton, Saratoga. The former, a gas well, 1,875 pounds pressure, in sand at 5,370-84 feet, is the third well in an area a mile south of the main Refugio Field. The Saratoga well is one of a series being drilled by Rio Bravo Oil Co. in the development of a shallow sand there.

After being bailed dry a second time, Houston Oil Co.'s No. 1 Conrad, T.&N. O. Survey No. 1, a wildcat on the Beck ranch prospect in northern Victoria County, has been abandoned. This test, which showed considerable gas and which at one time blew out while drilling around 5,000 feet, was drilled to a total depth of 5,290 feet but encountered heaving shale difficulties and was plugged to its present depth at 4,656 feet.

GULF COAST FIELDS AND WILDCATS

Week Ending January 23
All Rotary

BARBERS HILL—CHAMBERS COUNTY

Company, farm and location—	Remarks—
Mills Bennett Prod. Co.'s No. 5 Gulf-Fisher, Wm. Hodges Sur., 75 ft. from N line, 191 ft. W of No. 4	T.D. 4,407 ft.; set 31⅝ ft. screen with full string of 5-in. liner to top; comp. flowing 2,000 bbls. P.L. oil, 440 lbs. pressure, ½-in. choke.
R. E. Ferrell's No. 2 Wilburn, Henry Griffith League, 215 ft. W of No. 1 in center of 45-ft. tract	Drlg. salt 2,252 ft.; top of salt 2,200 ft.
Gulf Prod. Co.'s No. 7 Wilburn, Henry Griffith League, 177 ft. W of No. 6	Spudded.
McAlbert Oil Co.'s No. 5 Wilburn, Henry Griffith League, 375 ft. of No. 4	Spudded.
Rio Bravo Oil Co.'s No. 2 Fisher (W.O.), W. D. Smith Sur., 50 ft. out of NW cor. of tract	T.D. 5,390 ft.; sidetracked at 2,384 ft. to sand 3,338-48 ft.; cmtd. 7-in. csg. 3,290 ft.
Sinclair Oil & Gas Co.'s No. 9 Wilburn, Wm. Hodges Sur., 50 ft. N of S line and 550 ft. W of No. 6	T.D. 4,619 ft.; cutting and pulling screen to deepen.
Sinclair Oil & Gas Co.'s No. 10 Wilburn, Wm. Hodges Sur., 50 ft. S line, 100 ft. W of No. 9	Drlg. shale and lime 4,591 ft.
Sinclair Oil & Gas Co.'s No. 11 Wilburn, Wm. Hodges Sur., 125 ft. W of No. 8 and 45 ft. S of N line	Hard sand 4,432 ft.; to set 9-in. (O.D.) csg.
Sun Oil Co.'s No. 2 Higgins, Wm. Bloodgood Sur., 1,095 ft. W of No. 1 and 50 ft. N of S line	T.D. 3,645 ft.; trying to set 7-in. csg. 3,600 ft.
Sun Oil Co.'s No. 13 J. Wilburn, Wm. Hodges Sur., 200 ft. W of No. 13	Location.
The Texas Company's No. 2 Lawrence, Henry Griffith League, 240 ft. from E line and 412 ft. from N and S lines of strip	Coring sand 5,282 ft.
The Texas Company's No. 8 Wilburn, Henry Griffith League, 25 ft. W of No. 5 and 50 ft. N of S line of tract	Drlg. salt 1,601 ft.; top of salt 1,408 ft.
Texas Gulf Producing Co.'s No. 1 Scott-Fitzgerald, 125 ft. from S line and 71 ft. from E line of Strip No. 1, Henry Griffith League	Rig.
Texas Gulf Producing Co.'s No. 1 J. M. Fitzgerald, Henry Griffith League, 75 ft. from W line and 125 ft. from S line of tract	Set 3 jts. 5-in. screen 5,263 ft.; comp. flowing 2,160 bbls. P.L. oil, 440 lbs. pressure, 21/32-in. choke.
Texas Gulf Producing Co.'s No. 9-B Kirby, Henry Griffith League, 50 ft. out of SW cor. of J. M. Fitzgerald 50-acre tract and 110 ft. S of N line of Kirby tract	Cmtd. 24-in. csg. 36 ft.
Texas Gulf Producing Co.'s No. 9-H Kirby, Henry Griffith League, 87 ft. W and 130 ft. N of No. 8-H	Rock 814 ft.; sidetracking junk.

HUMBLE—HARRIS COUNTY

J. B. Burt et al's No. 2 C. O. &G.-The Texas Co. fee, J. B. Stevenson Sur., 450 ft. N of No. 1	Location.
Sun Oil Co.'s No. 27 Bender, W. B. Adams Sur., 350 ft. W of No. 26 in line with No. 25	Drlg. 1,225 ft.

(Continued on Page 133)

Probable New Gas Field on Craig Dome

Hobbs Pool Allowable Reduced Equal to One-Day Shutdown. Deep Test Likely on Hogback Dome. Good Well on Rattlesnake Dome

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Jan. 25.—The allowable outlet in the Hobbs Pool in New Mexico for the last half of January has been reduced to 31,876 bbls. daily, equal to the amount of the reduction if all wells were shut in one day each week. The Artesia Chamber of Commerce is seeking a carbon black plant for Eddy County. The Continental Oil Co. completed a 400-bbl. flowing well at 870 feet on the Rattlesnake Dome and is plugging back the discovery well in the Pennsylvania. A deep test may be drilled on the Hogback Dome next spring.

Colorado has promise of a new gas field on the Craig Dome, in Moffat County, where the Ohio Oil Co. drilled into a stray sand at 1,700 feet and will run casing and test before going deeper. There were no completions reported. The Fitzsimmons well, near Denver, again is attracting attention as it nears a sand that showed some oil early last year.

Operators in the Osage Field in Wyoming are seeking contracts for this year's production and one major refiner has placed one order at Mid-Continent prices. The Portland Association, Inc.'s No. 1 Beartooth, on the Garland Dome in Big Horn County, after blowing in last September as a gas and oil well, has been brought under control and is expected to make 5,000 bbls. per day.

Ohio Oil Co.'s No. 1 Chapman, which extends the Dry Creek Field in Carbon county, Montana, a mile to the northwest, gauged 886 bbls. in 24 hours. The Carbon Oil & Gas Co. made a new location south of its producer which extended the field a mile to the east. One completion in the Border Field was reported.

NEW MEXICO

The allowable outlet for the Hobbs Pool for the last half of January was put at 31,876 bbls. daily, a decrease of 5,307 bbls. daily from the figure for the last half of December. The decrease is equal to one-seventh of the former figure and takes the place of the one day per week shutdown which proved impractical for all the wells in this field, of which 12 are making water.

The Artesia Chamber of Commerce is investigating the possibilities for the erection of a plant for the recovery of carbon black in Eddy County. Figures on the quantity of gas available, cost of constructing a plant and expense of operating are being gathered and the Western Drilling Co. is co-operating in this work. The Artesia Advocate quotes C. J. Dexter, of the Western Drilling Co., as saying his company may construct a plant in the event an outside concern did not accept the proposal which is now open. This company recently brought in a gas well 4 miles to the northeast of the Artesia Pool in an area that has been but partially developed.

Lea County

Continental Oil Co.'s No. 4-A State, NE NW SE Section 33-18-38, on the southeastern side of the Hobbs Pool, is now on production and making its allowable outlet. It is producing through a five-fifty-fourths-inch choke with a back pressure of 500 pounds on the tubing and 1,240 pounds pressure at the bottom. When the well was opened for a one-hour test a few weeks ago it made 39 bbls. of fluid, of which 17 per cent was water, and gas at the rate of 35,000,000 feet.

Continental Oil Co.'s No. 6-B State, C SE SW Section 33-18-38, is drilling at 1,720 feet in salt. It topped the anhydrite at 1,560 feet.

Midwest Refining Co.'s No. 8 Byers, C NW NW Section 3-19-38, is rigging up rotary. The cellar and pit for this well were completed last September, but drilling was suspended temporarily. Midwest's No. 11 State, C NE NW Section 4-19-48, is drilling at 3,185 feet in anhydrite. It topped the anhydrite at 1,505 feet and the salt at 1,638 feet. The top of the brown lime was at 2,800 feet and the first gas at 2,814 feet. The 10¾-inch was cemented at 2,754 feet.

Eddy County

R. D. Compton's No. 1 Compton, NE NW NE Section 8-18-27, to the southwest of the Compton Pool, is shut down at 580 feet for repairs.

Flynee, Welch & Yates' No. 61 State, SE NE NW Section 32-18-28, is drilling at 1,160 feet in gypsum.

Leonard & Lever's No. 6 State, C NW Section 28-17-29, in the Maljamar area, is drilling at 2,200 feet in gray lime after cementing 6⅝-inch at 2,175 feet.

Flynn, Welch & Yates' No. 1 State, NE cor. SE Section 26-20-27, to the southwest of the Getty Pool, has completed road to location and has some material on the ground.

The New Mexico Oil, Syndicate has been given permission by the Department of the Interior to drill its No. 1 McClelland, C NW NE Section 22-22-23, for which a location was made last month. It is 25 miles west of Carlsbad. The location may be moved half a mile to the west of the one spotted.

De Baca County

Landowners Oil Co.'s No. 1 McAdoo, SW cor. NE Section 16-1s-27, Buffalo Creek, is bottomed at 4,664 feet in brown lime and fishing for tools.

Matador Oil Co.'s No. 1 Woods, NE SW SW Section 6-4n-20, Salada Creek, is drilling at 3,438 feet in black shale and troubled with cavey ground.

Guadalupe County

New Mexico Producing & Refining Co., Ltd.'s No. 1 McMullen, SW cor. Section 24-5n-16, Mesa Leon district, is shut down at 3,875 feet on account of the storm. It topped the Pennsylvanian beds at 3,440 feet. At 3,040 feet it had 16 bbls. of water per hour, enough to drill with, but it caused caving and 8¼-inch was mudded at 3,438 feet. A perfect shutoff was obtained, but a little more water was encountered at the bottom of the hole and the string will be underreamed to bottom.

Rio Arriba County

Governado Dome Oil Co.'s No. 1, NW NE NE Section 15-29-7w, is bottomed at 1,960 feet and lowering 5¾-inch. It is reported to have a show of oil at this depth.

San Juan County

The Continental Oil Co. has completed one of the largest wells brought in for some time on the Rattlesnake Dome in the shallow pay in its No. 27, NW SE NE Section 2-29-19. Total depth is 870 feet. The production is coming from the third Dakota sand, the two upper members having been cased off. Its initial production was 400 bbls. per day natural.

Continental's No. 24, SW NW SW Section 1-29-19, the second deep test to be drilled on the structure, is bottomed at 6,250 feet where it is changing back to rotary. It has less than 500 feet to go to reach the objective. At 6,066 feet it encountered a cavity which gave considerable trouble and standard cable tools were installed to drill through the bad ground. Its No. 17, C NE Section 2-29-19, the discovery well in the Pennsylvanian, which was on production for around two years at a total depth of 6,790 feet, was deepened to 6,961 feet without encountering any new production worth while and is cementing back after recovering lost tools.

It is reported on reliable authority, but not officially announced, that the Midwest Refining Co. will drill a Pennsylvanian test next spring on the Hogback Dome. This pool has been producing from the shallow sands in the Dakota for a number of years and no drilling has taken place for the past three or four years. The pool is produced in the shallow sands as a unit, there being only the one operator, and production is holding steady at close to 500 bbls. daily.

COLORADO

Moffat County

Favorable indications of the opening of a new gas field in northwestern Colorado are given in the Ohio Oil Co.'s No. 1 Bogenschultz, C SE SE Section 9-6n-91, on the Craig Dome, 3 miles southwest of the town of Craig and north of the Moffat Dome. The Williams Fork, or upper Mesa Verde formation, is exposed on the crest of this dome and it was expected the first important sand would be encountered at around 2,800 feet. However, at 1,742 feet, a stray sand that had a show of gas was topped. The drill stem was pulled and a corebarrel run and the sand was cored from 1,751 to 1,754 feet, showing an increase in gas. The hole is being drilled with rotary tools and was full of mud and water and no reliable estimate can be made as to the quantity of gas. However, preparations are being made to run the 12½-inch to the top of the sand, cement and make a test before drilling deeper. The only casing in the hole is the 15½-inch, which was cemented at 330 feet. At 400 feet a water sand was cut and at 1,210-78 feet another sand making around 20,000 bbls. of warm water with a slight odor of sulphur was penetrated. The gas was encountered about 1,100 feet above where the first favorable showing was expected.

The Craig, or Breeze structure, as it is shown on some maps, lies principally in Sections 9, 10, 15 and 16-6n-91, and is due east of the Bell Rock structure where the Midwest Refining Co. encountered a flow of 32,000,000 feet of gas in the Mesa Verde at 2,800 feet. Approximately 1,500 acres are inside the closing contour at Craig and the dome is somewhat larger than the Iles structure which is producing oil from the Dakota, Morrison and Sundance formations. It is planned to carry this test down to the Morapas sandstone at 4,000 feet if the sand at 2,800 feet contains nothing of value. The Morapas sandstone forms the escarpment around the Iles and Moffat Domes.

Weld County

Prairie Oil & Gas Co.'s No. 1 O'Toole, C SE NE Section 33-7n-62, Crow Creek

(Continued on Page 138)

ALBERTA OFFICIALS CONSIDER UNIT PLAN IN TURNER VALLEY

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Jan. 23.—In the Mercury tract, South Turner Valley, two tests are reported working close to production in the deep lime horizon. Miracle Oils' No. 3, LSD 11, Section 4-19-2w5, has resumed drilling after cementing casing 60 feet in the lime at 5,540 feet. Miracle's No. 2, LSD 16, Section 5-19-2w5, which has been standing at 5,598 feet will be finished after No. 3 has been drilled into production.

Hylo Oils' No. 1, LSD 12, Section 4-19-2w5, offsetting Mercury's No. 1, being completed by S. G. Carscallen, W. Fay Becker and Clarence Snyder of Calgary, is close to the lime at 5,420 feet, and some of the casing parted, causing considerable delay. It is swabbing 90 to 95 bbls. of light crude per day from the Home sands.

In the far south, Mar-Jon-Freehold's No. 1, LSD 9, Section 28-18-2w5, is at 2,850 feet after cementing 12½-inch casing and owing to weather will probably remain shut down till the end of January. This is the last active test in the extreme south, following completion of Sterling-Pacific Oil Co.'s No. 2, and if production is secured it will extend considerably the producing area of the south field.

Spray Test to Resume

In the Mercury tract, Spray Oils' No. 1, LSD 9, Section 5-19-2w5, is to be completed to the lime by Canadian Royalties, Ltd., of Calgary, which recently purchased the assets of Spray Oils, Ltd. The location is immediately west of Mercury's No. 1 producer, LSD 12, Section 4-19-2w5, close to proven production, including some of the largest wells in the south field. The test has been standing since 1929. At 1,550 feet, it had a show of gas and at 1,615 feet a show of oil. Drilling indicates the Blairmore formation will be reached around 2,400 feet and the Home sands around 4,000 feet. The latter horizon represents good possibilities of light crude, since Hylo Oils' No. 1, a short distance west, has been bailing 95 bbls. a day from that horizon. Spray's No. 1 is, however, apparently somewhat higher on structure.

Central Turner Valley

In the Central Turner Valley, Dome Oils' No. 2, LSD 16, Section 36-19-3w5, is securing recovery of 7 to 8 bbls. of crude naphtha per day from the lime horizon at around 5,375 feet. The well bridged following a shot in the lime, and wet gas production has been obstructed; the hole is also partly blocked by some metal. Production will not be taken till the weather moderates when efforts will be made to clear the hole which may develop a small commercial producer.

McLeod Oil Co.'s No. 1, LSD 16, Section 1-20-3w5, is cleaning out and deepening in the lime, using occasional small shots. Gas production has been considerably increased.

Enforce Unitization Scheme

That the Alberta government may pass legislation to enforce its scheme of unit operation of the Turner Valley Field was indicated by a speech by R. G. Reid, minister of mines, at Carstairs, Alberta. He urged the necessity of conserving the natural gas in Turner Valley, which, he said, would not last more than three years if

(Continued on Page 141)

Referendum on Sharkey Bill in May

Special Election Called by Governor Rolph. New Efforts to Enforce Gas Conservation Law. Curtailment Program Weakened

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Jan. 23.—Another week has passed and crude oil production in California is still above the 500,000-bbl. mark, notwithstanding the existence of a curtailment program, under the terms of which operators are expected to reduce production to a maximum of 456,700 bbls. per day during the first six months of 1932. This apparent weakening of the curtailment program has created a condition of uncertainty which in turn has precipitated a serious crisis from both a production and marketing standpoint. Strenuous efforts are being made to prevent a general breakdown but very little headway has been made up to the present. There is a very definite break in the curtailment program and it begins to look as though the curtailment committee is powerless so far as bringing these irreconcilables back into the fold. The situation is extremely acute notwithstanding the optimistic statements of executives that they hope to prevent a general breakdown.

The deflection in the curtailment program is especially serious because it is exerting an unfavorable effect on the existing price structure for crude and refined oils. The Oil Producers Sales Agency recently petitioned major companies to increase the posted price of crude oil in order to compensate producers for effecting the additional curtailment necessary to bring state production down to the allowable maximum of 456,700 bbls. per day. Major companies have been anxious for some time to increase the posted price for crude and would probably have done so before the close of 1931 if producers had shown any inclination to reach the new objective effective January 1, 1932. A number of operators flatly refused to meet the new curtailment order on a preliminary test December 21, and in doing so automatically precluded an upward revision in crude oil schedules.

Even the most confirmed optimist could not expect an upward revision in crude prices with production 50,000 bbls. per day in excess of the maximum allowable daily production established by the last economic survey. It is to be regretted that a small minority of producers have been able to demoralize an entire industry and thus void the commendable curtailment of the other 95 per cent.

Effect on Marketing

The partial breakdown in the curtailment program has exerted an unfavorable psychological effect on the marketing situation and it will require extreme care to prevent a repetition of the disastrous gasoline price war which occurred on the Pacific Coast during the early part of 1931. Wholesale prices of gasoline have registered fractional losses for several weeks and this has been reflected in the retail price of motor fuel. Major companies have been sitting tight up to the present time but cannot continue to do so indefinitely, especially when there is a spread of 4 or 5 cents between the retail price of gasoline manufactured by major companies and motor fuel distributed by independent refiners. During the past week retail gasoline prices broke in Seattle, Portland and San Francisco. In Portland, Ore., a number of service stations reduced retail prices from 18 cents per gallon to 13 and 14 cents. Major companies in that area are still maintaining a price of 18 cents per gallon tax paid. In Seattle, retail prices were reduced approximately 3 cents per gallon. In the San Francisco Bay region and down along the San Mateo Peninsula retail prices have been reduced from 2 to 3 cents per gallon. Independent refiners and executives of the major companies are making strenuous efforts to stabilize quotations and are hopeful the entire situation will be cleaned up within 10 days. It is the opinion of well-informed oil men that if a price war occurs during 1932 a number of chronic price cutters will ultimately come to the conclusion that Darwin's theory of the survival of the fittest is particularly apropos of the marketing situation on the Pacific Coast.

Sharkey Bill

Interest in the Sharkey Oil Conservation Bill was revived this week by an announcement from Sacramento that Governor James Rolph, Jr., had ordered a special state election to be held in conjunction with the presidential primary election May 3, 1932, at which time this measure and two other bills affecting the oil industry will be submitted to California voters for consideration. By ordering a special election, instead of assuming that the May primary could be termed a general election, Governor Rolph has removed any doubt as to the validity of the vote to be held on several measures against which referendum petitions were successfully circulated last year. The decision to place the Sharkey conservation bill on the ballot May 3 is of extreme importance because it may result in stabilization of the California oil industry, in spite of the action of a small minority.

It will be necessary for proponents of compulsory curtailment to undertake an aggressive campaign as it will be extremely difficult to secure affirmative votes because the public has been led to believe up to the present that curtailment of production will result in higher prices for gasoline. If voters of California uphold the Sharkey conservation bill it will immediately become effective, but actual enforcement will not be possible until some time later. This delay will be due to the necessity of conducting a general economic survey and selection of members for the Fact Finding Commission of six members. Members of the legal fraternity, while dubious as to the possibility of securing an affirmative vote, are of the opinion that sufficient precedent has been established to defeat any attempt to prevent enforcement by resorting to legal technicalities if the measure is adopted.

Gas Conservation Law

In addition to placing the Sharkey bill on the May, 1932, ballot, the administration has instructed James S. Bennett, attorney for the Director of Natural Resources, to proceed with enforcement of the gas conservation law to alleviate conditions as much as possible. The Department of Natural Resources is making preparations to petition the Superior Courts at Los Angeles and Hanford to issue permanent injunctions against any further waste of natural gas in the Santa Fe Springs and Kettleman Hills fields. Very little gas is being blown to the air at the present time but a number of producing wells in both fields are exceeding what the department considers a reasonable gas-oil ratio. In conformity with a recent decision of the United States Supreme Court, action will be predicated on the correlative rights of all producers in each field. In the Bandini case, the Supreme Court upheld the decision of Superior Judge Hazlet in granting a temporary injunction prohibiting the waste of natural gas pending determination of the merits of the case involved. The Bandini Petroleum and others endeavored to prevent enforcement of the gas conservation law pending the outcome of the action before the court.

The hearing to grant a permanent injunction prohibiting further waste of natural gas will undoubtedly prove exceptionally interesting because the court must rely on the technical advice of petroleum engineers whose opinions will naturally vary as to the correlative interests of individual producers. It is needless to say that each session will extend over a long period of time, particularly if the representative of the Department of Natural Resources endeavors to predicate the correlative rights of producers in the original reservoir. To do this engineers of the department must go back and compile the total production of natural gas which has been produced up to the present. In many cases natural gas was blown to the air and no record kept as to the total quantity dissipated.

Complex Situation

It is obvious that crude oil production will be sympathetically reduced if the Superior Court recognizes the correlative rights of producers in the original pool and accordingly restricts current production of natural gas to compensate for any quantity taken in excess of their correlative share. It is questionable whether it is within the province of the court to order a well shut down because it has produced more than its proportionate share in the original reservoir because any operator so involved could introduce technical data to support his contention that he has not exceeded his correlative share of the total accumulation. The situation is exceedingly complex and the final decision will be of paramount importance to all producing areas. The situation at Kettleman Hills is a little different from conditions at Santa Fe Springs, both because of the magnitude of this field and abnormal gas-oil ratio of wells producing from the Elliott high pressure gas zone.

The Los Angeles City Council was unable to make a definite decision regarding the advisability of permitting the Ramsey Petroleum Co. to drill a wildcat in the Riverside Drive district of Los Angeles and accordingly took the matter under advisement. The Ramsey interests have been endeavoring for more than a year to test out this structure adjacent to Elysian Park and agreed to post a sufficient bond and abate any and all nuisances which might result from drilling operations. Such a storm of protest arose, however, that the Los Angeles City Council deemed it advisable to investigate the situation more fully before making a definite decisions. The area involved is a modest residential district and, while property owners on the structure desire development, property holders outside the area involved are making a strenuous attempt to prevent exploration work.

The deplorable condition existing in the Playa Del Rey Field of Los Angeles Basin is probably the most damaging factor with which the Ramsey interests have to contend in their efforts to secure a drilling permit in the Riverside Drive area. The situation at Playa Del Rey has reached such a deplorable condition that the Los Angeles Fire Commission has asked the City Council to take steps to restore the district to its original condition wherever possible. A report submitted by Battalion Chief Pierret, head of the fire prevention bureau, reveals the fact that a number of operators after abandoning wells have made no effort to fill in the sump holes or restore the property to its original condition. This is particularly true of wells drilled previous to enactment of a city law requiring the posting of a $5,000 bond to guarantee restoration upon the completion of work. Because of the low price commanded by Playa Del Rey crude, operators have not been able to clean up the usual debris which normally accumulates during the development period. The situation in this area is particularly aggravated although the fire department has forced a number of operators to eliminate fire hazards wherever possible.

Kettleman Hills

There were no completions listed in the Kettleman Hills Field during the week and a check indicates the probability that no new wells will be finished until late in February or early in March. The North American Consolidated's No. 1 Blauvelt in the North Dome of Kettleman Hills is still held up with mechanical trouble and very little progress was made during the week in recovering the string of drill pipe which froze in this 9,500-foot hole at 8,800 feet. Mud and oil are being circulated in an effort to loosen the fish and this may be productive of satisfactory results in the near future. If this hole is successfully cleaned out, the North American may drill to a depth of 10,000 feet before

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Diesel and gas oil	.....	.....	.....	.....	.....	208,486
Gasoline	.....	.....	152,057	21,722	484,289	1,143,619
Coastwise:						
Crude oil	114,940	16,420	366,297	52,328	732,254	1,172,266
Fuel oil	230,509	32,930	330,232	47,176	673,192	1,114,343
Diesel and gas oil	71,923	10,275	52,752	7,536	130,455	150,893
Gasoline	190,065	27,152	258,849	36,978	768,021	762,673
Kerosene	6,038	863	.....	.....	8,325	26,729
Exports:						
Crude oil	152,816	21,974	194,954	27,851	498,714	567,713
Fuel oil	356,619	55,231	253,956	36,279	716,793	875,831
Diesel and gas oil	.....	.....	.....	.....	119,845	197,571
Gasoline	244,574	34,939	129,559	18,513	374,163	1,064,204
Kerosene	19,502	2,786	.....	.....	19,502	2,022

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC, GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Gasoline	.....	.....	79,650	11,379	147,549	.....
Lubricants	.....	.....	.....	.....	7,560	.....
Coastwise:						
Fuel Oil	62,591	8,942	197,053	28,150	322,224	224,639
Diesel and gas oil	40,791	5,827	.....	.....	40,791	.....
Gasoline	.....	.....	93,973	13,425	258,615	128,939
Kerosene	.....	.....	10,406	1,487	14,746	7,761
Exports:						
Crude oil	.....	.....	.....	.....	7,759	.....
Diesel and gas oil	31,760	4,537	.....	.....	112,891	.....
Gasoline	216,790	30,970	73,449	10,493	290,239	82,170
Kerosene	.....	.....	.....	.....	.....	94,961

making a production test, provided of course geological conditions are favorable. North American's No. 1 Elsinore, another well located rather far out on the north flank, is rotating in the oil sand at 8,500 feet and is showing up much better than had been anticipated. The Kettleman North Dome Association, Standard, Associated, and the Powell-Stockton Investment Co. all made normal progress during the past seven-day period.

In the Middle Dome, however, the Petroleum Securities is not meeting with much success in its attempt to recover the 6⅝-inch flow string and remedy the defective condition of the 8⅝-inch water string landed and cemented at 7,326 feet. There has been quite a change in the status of production in the Kettleman North Dome during the past year. The production in January, 1931, forms a sharp contrast with existing conditions as during the former period over half the production of the field was light oil from the Elliott zone and the remaining half heavy black oil from the deep Ochsner zone. Current production of the North Dome approximates 60,000 bbls. per day, of which 5,375 bbls. is light oil averaging in excess of 60 degrees A.P.I. and approximately 55,000 bbls. of black oil averaging 40 degrees. The light oil from the upper or Elliott zone represents the production of three wells drilled by the Standard Oil Co. and two by the Kettleman North Dome Association. Light oil production of the former approximates 3,495 bbls. per day, while Kenda's production from two wells totals 1,880 bbls. per day at the present time.

Ownership Changes

The ownership of acreage in the North Dome of Kettleman Hills has also changed since January, 1931. The most recent deal consummated involves the purchase of 1,280 acres of government leases by the Shell Oil Co. from George F. Getty, Inc. The Shell paid approximately $4,500,000 for 320 acres, which the government classes as A leases, and 960 acres classed as B leases. The financial consideration is payable over an extended period and with the completion of this deal the Shell now has a 12.2 per cent interest in the Kettleman North Dome Association. Just previous to this purchase by the Shell Oil Co., the Union Oil Co. acquired one-half of the Belmont Investment Co.'s interest in the Kettleman North Dome Association for an unannounced consideration. The Union's first acquisition at Kettleman Hills consisted of the purchase of a one-half undivided interest in the Amerada's 160-acre King lease for a consideration of $8,000,000, one-half of which, however, is payable from production. This is on the basis of approximately $100,000 per acre and, while this appears rather high, recent developments indicate the probability that the entire 160 acres will be found substantially productive. As a matter of fact, a well of the Kettleman North Dome Association located still farther out on the structure encountered the top of the brown shale at a point stratigraphically higher than it was logged in the Union's No. 1 Amerada King. Just previous to the Union Amerada deal, the Kettleman Oil Corp. disposed of its leases in the north dome for a consideration of $10,500,000. Of this amount, $1,000,000 came from the Pacific Western Oil Co. and $9,500,000 from the Standard Oil Co. and the Honolulu Consolidated.

Dominguez

There were no wells completed in the Dominguez Field of Los Angeles Basin during the week, although it appears probable the Shell will list No. 41 Reyes during the next two weeks. In addition the Union will probably complete No. 23 Callender which ran into bottom water in the third Callender zone at 5,122 feet. The only other well drilling in this field is No. 11 De Francis of the Associated, but three additional projects made necessary by lease requirements should be under way early in February. One is Shell's No. 42 Reyes, which will be drilled as an offset to Associated's No. 11 De Francis. The Shell is also rigging up No. 101 Reyes preparatory to carrying it down to the third Callender zone. The Union is building rig for No. 28 Callender, a new well, and field reports indicate the company may also start a new well on the Hellman property in the near future.

The Continental Oil Co. successfully recompleted No. 1 Selover in the Seal Beach Field of Los Angeles Basin early in the week and this former upper zone producer was returned to production flowing 875 bbls. of 27.3 gravity oil per day after being redrilled and deepened to 6,389 feet and subsequently plugged back to 6,345 feet. The Standard Oil Co. immediately upon the completion of No. 1 Selover started preparations to redrill and deepen No. 12 San Gabriel, a direct offset. The Continental is drilling one other well in the Seal Beach Field but it will be several weeks before this project, No. 26 Selover, is on production. There were few developments of importance in the Long Beach Field, with the exception of the resumption of unrestricted production by several operators. The Star Petroleum Co.'s No. 2 Colby, an edge well in the Loe Cerritos section of the field which has been standing shut in for some time, was opened up early this week and returned to production flowing 175 bbls. of 24.6 gravity oil per day. The Dabney-Johnston Oil Co. has also opened up a number of wells which had been shut down in compliance with the existing curtailment program. The Duncomb Oil & Gas Co. finished No. 2 Conductor early in the week, but this well, which came in flowing 1,400,000 feet of gas per day, is now flowing 100

(Continued on Page 141)

MANY TESTS IN MT. PLEASANT IN ADVANCE OF PRODUCTION

By George A. Whitney

MOUNT PLEASANT, Mich., Jan. 25. Considerable test work is under way in scattered areas of Isabella and Midland Counties in advance of production. Drilling in the proven fields has been checked to a minimum chiefly as the result of overproduction and low price for crude oil.

Walter Lee McClanahan is drilling No. 3 Struble farm, and No. 1 Corning estate, Section 2, Greendale Township, north of the big wells to test out that area. He has made locations for No. 4 Struble, and No. 1 Root, Section 12, same township. Other wildcat operations which are being closely watched are Pure Oil Co.'s No. 1 Howland farm, Section 23, Porter Township; E. S. Hammond's No. 1 Graham, Section 22, Chippewa Township, Isabella County; Bertha Jones' No. 1 Jones-Woodruff, Section 13, Greendale; Pure Oil Co.'s No. 1 Mason-Kidder, Section 17, Greendale Township; Strom's No. 1 Newland, Lee Township, Section 19; Theodore Oil Co.'s No. 1 Robinson, Section 26, Lee Township; Markle's No. 1 Simms, Mount Haley Township, Section 4; Wells and Miller's No. 1 Thom, Section 9, Lee Township; Maire's No. 1 Wilson, Section 12, Gilmore Township, Isabella County.

Theodore Oil Co.'s No. 1 on the southwest corner of the J. M. Robinson 40 acres, SW NW, Section 26, Lee Township, Midland County, about 5 miles east and south of the East Pool, struck water, and is out of the running, unless a pay is found below the water, which is doubtful. Failure of the Robinson well to strike oil probably will be accepted as evidence of the far East Pool not extending greatly beyond the Hewitt well. Other tests under way in Lee Township, Midland County, or farther east in Mount Haley Township, may bring to light new oil bearing structures in the area east of the present pool in Greendale Township.

Leonard Oil & Gas Co.'s No. 9 Keeler-McClitic farm, NE•NW NE, Section 11, Chippewa Township, Isabella County, in the old Mount Pleasant-Midland Pool, was completed for at least a small producer, having made 35 bbls. a day under pump, and is in the heart of the old producing territory, where large wells were found in the past.

Talbot Oil Co.'s No. 3 Frank Adams farm, SW SW, Section 10, Greendale Township, Midland County, drilled into the first pay sand in the Dundee formation, and while not showing for a gusher

(Continued on Page 139)

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.-T.-R.	Depth	Status
Barnsdall, No. 1 Los Alamos, Santa Barbara Co.	31- 8-33	rig	rigging up
Western Gulf, No. 1 Santa Maria, Santa Barbara Co.	5- 9-33	8,566	sidetracking
Midwest Oil Co., No. 1 Los Alamos, Santa Barbara Co.	2- 7-35	3,450	cleaning out
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	6,912	plug 5,226 ft.
General Pet., No. 4 Goleta, Santa Barbara Co.	3- 4-29	rig	rigging up
General Pet., No. 133 Goleta, Santa Barbara Co.	21- 4-28	2,030	suspended
General Pet., No. 134 Goleta, Santa Barbara Co.	21- 4-28	2,053	suspended
General Pet., No. 136 Goleta, Santa Barbara Co.	21- 4-28	2,047	suspended
General Pet., No. 137 Goleta, Santa Barbara Co.	21- 4-28	2,050	suspended
Bowles Oil Co., No. 140 Goleta, Santa Barbara Co.	21- 4-28	2,065	suspended
U. S. Pet., No. 141 Goleta, Santa Barbara Co.	20- 4-28	2,004	suspended
U. S. Pet., No. 142 Goleta, Santa Barbara Co.	20- 4-28	2,012	suspended
U. S. Pet., No. 143 Goleta, Santa Barbara Co.	20- 4-28	2,010	suspended
El Camino, No. 149 Goleta Tideland, Santa Barbara Co.	22- 4-28	2,010	suspended
Bellview Oil Co., No. 159 Goleta, Santa Barbara Co.	24- 4-29	2,099	suspended
Johnson & Strickland, No. 1-A Goleta, Santa Barbara Co.	19- 4-27	4,886	cleaning out
The Texas Company, No. 2 Carpenteria, Santa Barbara Co.	34- 4-24	412	core hole
Sovercign Oil Co., No. 1 Guadalupe, Santa Barbara Co.	20-10-35	5,500	suspended
Pacific Western, No. 1 Gibralter, Santa Barbara Co.	14- 5-27	2,345	suspended
Pacific Finance Co., No. 1 Carpenteria, Santa Barbara Co.	Tideland	2,011	suspended
Associated, No. 1 Rincon Creek, Ventura Co.	19- 4-24	2,080	suspended
Bell, H. H., No. 1 South Mountain, Ventura Co.	22- 3-21	2,090	rd. sh. drilling
Pure Oil Co., No. 1 S. F. Canyon, Ventura Co.	15- 4-21	2,591	suspended
Woodruff Oil Co., No. 1 Miguelito, Ventura Co.	4- 3-24	....	building road
Graham & Loftus, No. 1 Goose Lake, Kern Co.	20-27-22	5,775	sd. sh. drilling
General Pet., No. 1 Buttonwillow, Kern Co.	6-28-23	2,615	cleaning out
Wilshire Oil Co., No. 1-A Buttonwillow, Kern Co.	7-29-24	7,000	suspended
Milham Expl. Co., No. 6 Buttonwillow, Kern Co.	8-28-23	4,495	suspended
Furman, T. H., No. 1 McKittrick, Kern Co.	22-29-21	2,385	sd. sh. drilling
Federal Drlg. Co., No. 1 Buena Vista, Kern Co.	20-31-24	5,380	suspended
General Pet., No. 1 Belridge, Kern Co.	30-28-21	7,850	br. sh. drilling
Wallace, K. C., No. 1 Belridge, Kern Co.	32-29-21	4,222	suspended
Rio Cal Pet., No. 1 Shale, Kern Co.	2-27-18	2,355	suspended
Wicker, Sy., No. 1 Arvin, Kern Co.	12-30-28	3,850	suspended
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	5,910	suspended
Osborn, Colter, No. 1 Weed Patch, Kern Co.	15-30-29	3,465	suspended
Osborn, Colter, No. 2 Weed Patch, Kern Co.	15-30-29	2,005	suspended
Fullerton Oil Co., No. 2 Semitropic, Kern Co.	25-27-23	2,375	core hole
Standard, No. 1 Devils Den, Kern Co.	14-25-18	1,600	suspended
Cumberland Oil Co., No. 2 Devils Den, Kern Co.	17-26-18	3,175	gr. sd. drilling
Signal Oil Co., No. 1 Blackwell Corner, Kern Co.	15-26-19	106	suspended
United Kern Pet., No. 1 Mojave, Kern Co.	26-10-14	1,065	suspended
Meridian Oil Co., No. 1 Mojave, Kern Co.	11- 9-15	4,000	suspended
Kendall Dev. Co., No. 1 Mojave, Kern Co.	27-11-9	1,075	hd. sd. drilling
Harding, J. B., No. 1 Mojave, Kern Co.	5-10-10	1,030	redrilling
Barnsdall Oil Co., No. 1 Tejon, Kern Co.	15-11-20	2,080	sd. sh. drilling
Ritchie, J. J., No. 1 Tejon, Kern Co.	33-11-19	6,025	suspended
Descanso Oil Co., No. 1 Tejon, Kern Co.	31-11-19	rig	rigging up
Associated, No. 1 Jacalitos, Fresno Co.	22-21-15	6,197	suspended
Kingsburg Expl. Co., No. 1 Kingsburg, Fresno Co.	30-16-23	2,390	suspended
Kent & McDonald, No. 1 Carrizo, San Luis Obispo Co.	3-32-22	2,502	cleaning out
Trav-El Oil Co., No. 1 Carrizo, San Luis Obispo Co.	7-32-32	2,450	suspended
Indian Dome Oil Co., No. 1 Edna, San Luis Obispo Co.	26-31-12	3,380	cleaning out
Martin, J. D., No. 1 Edna, San Luis Obispo Co.	5-31-12	2,990	redrilling
Paso Robles Oil Co., No. 1 Edna, San Luis Obispo Co.	27-27-11	4,027	cleaning out
Paso Robles Oil Co., No. 2 Edna, San Luis Obispo Co.	5-28-12	725	sd. drilling
Emerich Oil Co., No. 1 Atascadero, San Luis Obispo Co.	13-28-12	1,730	br. sh. drilling
Schilling, C., No. 1 Atascadero, San Luis Obispo Co.	1-29-12	1,650	suspended
Pacific Inland, Well No. 1, Monterey Co.	19-23-15	2,280	suspended
Brown, W. F., No. 1 Parkfield, Monterey Co.	15-23-14	1,051	suspended
Guess, E. B., No. 1 Corcoran, Kings Co.	7-21-21	6,197	redrilling
Niel, W. B., No. 1 Dudley Ridge, Kings Co.	32-22-20	rig	rigged up
Guess, E. B., No. 1 Dudley Ridge, Kings Co.	12-22-22	1,577	sd. sh. drilling
Irma Investment Co., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,345	gas well—idle
Irma Investment Co., No. 2 Dudley Ridge, Kings Co.	7-23-20	1,224	prod. test
Eagle Oil Co., No. 1 Dudley Ridge, Kings Co.	15-23-20	691	cleaning out
Kettleman Oil & Gas Co., No. 1-A Dudley Ridge, Kings Co.	20-23-20	1,194	gas well—idle
Valley Expl. Co., No. 1 Dudley Ridge, Kings Co.	12-23-19	1,302	cemented
Valley Expl. Co., No. 2 Dudley Ridge, Kings Co.	12-23-19	1,200	suspended
Knudsen & Schmidt, No. 1 Reef Ridge, Kings Co.	36-23-17	5,050	hd. sd. drilling
Seymour, L. W., No. 1 Avenal, Kings Co.	10-23-16	1,148	suspended
Tulare Basin Gas Co, Well No. 1, Kings Co.	2-23-19	901	sd. drilling
Tulaco Oil Co., No. 1 Corcoran, Tulare Co.	20-22-22	rig	suspended
Ducor Pet. Co., No. 1 Ducor, Tulare Co.	14-24-27	2,200	suspended
Inland Valley Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	2,092	suspended
Gravity Expl. Co., No. 1 Alpaugh, Tulare Co.	11-24-23	rig	suspended
Ellis & Sanford, No. 1 Tulare Lake, Tulare Co.	20-24-23	1,920	cleaning out
Twin State Oil Co., No. 1 Point Arena, Mendocino Co.	14-12-17	7,694	suspended
Orinda Pet., Well No. 1, Contra Costa Co.	32- 1-3	2,120	suspended
Colusa Oil Co., No. 1 Bush, Colusa Co.	31-15-4	1,040	hd. sd. drilling
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	3- 2-10	4,750	cleaning out
Hilderbrandt, R., No. 1 Crows Landing, Stanislaus Co.	36- 6-7	1,130	sd. sh. drilling
Orland Oil Synd., No. 1 Orland, Tehama Co.	31-23-3	3,040	suspended
Union Oil Co., No. 1 Tracy, San Joaquin Co.	14- 3-6	3,550	bl. sh. drilling

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.-T.-R.	Depth	Status
Hines Pet., No. 1 Ocean Park, Los Angeles Co.	9- 2-15	7,414	cleaning out
Taylor Oil Co., No. 1 Culver, Los Angeles Co.	12- 2-15	6,238	suspended
Westwood Oil Co., No. 2 Hermosa, Los Angeles Co.	6- 4-14	2,151	suspended
Staple Oil Co., No. 1 Manhattan, Los Angeles Co.	24- 3-15	2,700	suspended
Lawndale Pioneers, Inc., No. 1 Peck, Los Angeles Co.	20- 3-14	5,850	sd. sh. drilling
Mohawk Pet., No. 1 El Nido, Los Angeles Co.	29- 3-14	4,460	sd. sh. drilling
Avalon Park Dev. Co., No. 1 Watson, Los Angeles Co.	28- 4-13	3,785	cleaning out
Ranger Pet. Co., No. 1 Watson, Los Angeles Co.	17- 3-13	rig	suspended
Pedro Pet. Corp., No. 1 San Pedro, Los Angeles Co.	14- 5-14	rig	suspended
Brubaker, W. O., No. 1 Van Nuys, Los Angeles Co.	11- 2-15	2,700	suspended
Rucker & Croul, No. 2 Cuente, Los Angeles Co.	27- 2-10	2,200	suspended
El Dorado Oil Co., No. 1 Puente, Los Angeles Co.	30- 2-9	2,250	suspended
Cudahy Oil Co., No. 1 Bell, Los Angeles Co.	30- 2-12	1,370	suspended
Jones, W. L., No. 1 Bell, Los Angeles Co.	31- 2-13	280	cemented
Weist Oil Co., No. 1 Montebello, Los Angeles Co.	34- 1-11	4,902	suspended
Blinn & Gray, No. 1 Montebello, Los Angeles Co.	6- 2-11	5,060	cemented
Wardell & Menichini, No. 1 Montebello, Los Angeles Co.	7- 2-11	rig	rigged up
Yellowstone Oil Co., No. 1 Alhambra, Los Angeles Co.	24- 1-13	3,919	suspended
Yellowstone Oil Co., No. 2 Alhambra, Los Angeles Co.	19- 1-12	2,015	suspended
Davidson Oil Co., No. 1 Monterey Park, Los Angeles Co.	32- 1-12	....	location
Rucker, L. W., No. 1 Calabasas, Los Angeles Co.	26- 1-17	1,004	cleaning out
Caballero Estates, No. 1 Calabasas, Los Angeles Co.	23- 1-16	1,460	suspended
Simi Oil Co., No. 1 Calabasas, Los Angeles Co.	18- 1-17	4,950	sd. sh. drilling
Simi Oil Co., No. 2 Calabasas, Los Angeles Co.	18- 1-17	265	suspended
Marble, Willard, No. 1 Chatsworth, Los Angeles Co.	6- 2-16	1,395	gr. sd. drilling
Ajax Pet., No. 1 Newport, Orange Co.	21- 6-10	6,690	br. sh. drilling
Beck, Alfred, No. 1 Corona, Riverside Co.	8- 4-6	1,100	suspended
Spindletop Oil Co., No. 1 Salton Sea, Riverside Co.	25- 7-10	3,530	sd. sh. drilling
Duncan, N. L., No. 1 Sagebrush, Riverside Co.	8- 4-6	1,157	suspended
Colan Dev. Co., No. 1 Redlands, San Bernardino Co.	25- 1-12	2,392	suspended
Mason Oil Co., No. 1 Salton Sea, Imperial Co.	1-17-15	635	sd. sh. drilling
Woods, D. H., No. 1 Salton Sea, Imperial Co.	7-11-16	670	sd. sh. drilling
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	12-13-4	2,519	suspended
Borderland Oil Co., No. 2 Encinitas, San Diego Co.	12-13-4	1,875	sd. sh. drilling
South Bay Oil Co., No. 1 Border, San Diego Co.	31-18-2	1,243	suspended
Itasca Pet. Co., No. 1 Mesa, San Diego Co.	33-18-1	1,700	cemented
Carr, O. K., No. 1 Capistrano, San Diego Co.	13- 6-8	5,250	suspended
Okahoma Oil Corp., No. 1 Palmes, San Diego Co.	25-11-8	1,115	sd. sh. drilling

Gas Operators Busy in Central West

Wyandot County in Old Lima Field and Stark County Lead in Activity. Two Completions Reported in Kentucky Field

By George A. Whitney
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Jan. 25.—In the central Ohio area a considerable amount of drilling is being done for gas, with Stark County far in the lead, and better results are being obtained there than in any other county in this productive gas area. The wells are expensive on account of their depth, ranging from 4,000 to as deep as 5,000 feet. In the old Lima Field interest centers on the new development in parts of Wyandot County where both gas and oil are being sought. The early spring season will no doubt show a more active development than during 1931, as oil has been found in the supposed gas area which gives the leaseholders two chances, instead of one, as heretofore.

Two completions were reported from the Lima Field, one a gas well and the other a dry hole. The light gas well was drilled by Jones and Coyle, in No. 1 McLeod Brown farm, Section 21, Tymochtee Townhsip, Wyandot County, the gas being found from 1,368-80 feet. In the same township, O'Neal and others' test on the A. T. Spayth farm, Section 6, developed into a dry hole from 1,568-98 feet. These developments are along the low ground of the Sandusky River, and at this time the river is high on account of the recent rains, as are all streams in most parts of northwestern Ohio, northeastern Indiana and southern Michigan. Murphy and others are drilling on the C. S. Grubel farm, Section 7, Tymochtee Township, Wyandot County.

The test of Ennis Brothers and others on the William Harpst farm, Lot 4,478, Jefferson Township, Logan County, looks very much as though it will go in the list of dusters, as no showing has been found at a total depth of 1,795 feet.

CENTRAL OHIO

The Central Ohio field shows a nice gain in completed work for this season of the year, most of the work being done in the gas regions, with fairly good success, although occasional oil wells are found, mostly in Medina County, where a shallow crude is found in the Berea sand. Stark County is the most active developing area of this large oil and gas area, and nearly one-half the work being done is centered in that county.

The week showed 13 completions in Central Ohio, of which 5 were producers with an initial of 120 bbls., 3 dry holes and 5 gas wells. In new work starting, there were 7 rigs put up and 8 wells started drilling or spudding, a total of 15 in new work.

In Ashland County, the Ohio Fuel Gas Co. brought in a fair gas well in No. 1-5,595 on the Roy R. Niswender farm, Section 15, Jackson Township. Commonwealth Gas Corp. has spudded in No. 1 on the Oratta Bennett farm, Section 31, same township.

In Medina County, Chatham Township, Edson Sons Co. reports a 50-bbl. initial producer in No. 30 George W. Packard farm, in Section 4, in the Berea sand from 326-97 feet. No. 31, same farm, is reported good for 25 bbls. initial from 332-435 feet. Same company's No. 34 Marcus A. Frank farm, Section 20, same township, is rated as a dry hole, as no Berea sand was found. Oko Oil & Gas Co.'s No. 53 Henry Essig farm, Section 3, is a 10-bbl. initial producer from 323-77 feet. In Westfield Township, same county, Barnhart and others drilled in a light gas well on the E. G. Norton farm, Section 33, at a total depth of 3,226 feet. Barnhart and others also brought in their No. 6 Joseph Funk farm, Section 6, Harrisville Township, same county, for a 25-bbl. initial producer at from 329-55 feet.

Holmes County

In Holmes County, Monroe Township, the Lydic Oil & Gas Co.'s No. 1 Ralph Clinage farm, Section 20, is reported showing for 10 bbls. from 672-82 feet. I. E. O'Hail's test on the Rachael Gray farm, Section 17, Knox Township, is an average gas well in the Clinton lime from a total depth of 3,181 feet. This well also shows some oil and may develop into an oil producer.

In Richland County, Franklin Township, Chesrown and others' No. 1 Samuel Simpson farm, Section 9, is reported a dry hole in the Berea sand from 297-305 feet, but may be drilled to the lower formations some time.

In Coshocton County, Mill Creek Township, the Ohio Gas, Light & Coke Co. has a very light gas well in No. 4 on the John Hault farm, Section 9, at from 820-51 feet.

In Summitt County the only change was the starting by Smith and others of their second test on the Charles A. Smith farm, Section 19, Green Township.

The only change noted in Licking County was the starting of a test by the Wehrle Gas Co., on No. 4 Fred W. Hobart heirs farm, Sections 5 and 6, in Grandville Township. Same company has a showing of oil on the James M. Iches farm, Section 3, Hopewell Township, same county, and has hopes of making a producer at a depth from 3,174-3,-232 feet.

In Muskingum County, Monroe Township, Bell Brothers' test on the George M. Lane farm, Section 11, is reported a dry hole at 1,073 feet. Palmer & Geisinger are drilling No. 1 Bertha E. Drake farm, Section 3, Brush Creek Township, same county.

In Athens County Standard Natural Gas Co. is drilling No. 8 James Bowden farm, Section 16, Waterloo Township.

In Stark County Brendall and others are drilling No. 1 Emma P. Smith farm, Section 11, Jackson Township, and have rigs up for No. 2 Charles Yearkey farm, Section 21, and for No. 1 on the H. and A. Huthmacher farm, Section 11. East Ohio Gas Co. made two new locations, No. 1 Brainard K. Pry farm, Section 15, and No. 1 Elza Hall farm, Section 12, Jcakson Township. In Plain Township, same county, the Medford Oil & Gas Co. has a light gas well on the Mary Gill farm, Section 20, at a depth of 4,518 feet.

Belmont County

In Belmont County, Somerset Township, A. C. Peters and others have only a light gas volume on the Allen Price farm, Section 20, in the Berea sand from 1,900-20 feet, and will probably go to a greater depth. In the same township, the Central Gas Co. failed to find a producer of value so far, as the well found

(Continued on Page 136)

Three Small Wells in Southeast Ohio

Two Fair Gas Wells Completed. West Virginia Completions Also Low. Chestnut Ridge, Pa., May Get Another Test

By Staff Correspondent

PITTSBURGH, Pa., Jan. 25.—Two fair gas wells were completed in Southeast Ohio during the past week. The larger was the Pure Oil Co.'s No. 6 on the C. S. Stutes farm in the SE, Section 3, Brush Creek Township, Muskingum County. It was completed in the Clinton sand at a depth of 4,002 feet and is rated as good for 2,000,000 feet a day. There was also a slight showing of oil in the Clinton sand. The other gas completion was in Athens County where Robinson Brothers drilled a test on the William White heirs and C. W. Vorhees lease, near Albany, in Section 13, Lee Township. It reached the Grit at 1,199 feet where the gas was struck and is showing for about 1,000,000 feet a day.

SOUTHEAST OHIO

In addition to the two gas wells completed, three oil producers were added in Southeast Ohio and there was also a report of a new test proving dry. In the NE, Section 3, Cambridge Township, Guernsey County, George Jewell and others completed a fair test on the William A. and Clyde Marshall farm. It was drilled in the Niagara lime at a depth of 3,473 feet and produced 25 bbls. naturally the first 24 hours. It was subsequently shot with 20 quarts which increased the production considerably. Near Hamley Run in Section 12, Waterloo Township, Athens County, the Standard Natural Gas Co. completed a test on the Winnie Gooden farm at a depth of 1,092 feet and in the Grit formation. It produced 3 bbls. the first day after shot.

In Holmes County, the Lydick Oil & Gas Co. and others drilled a test on the Ralph Clinage farm, Lot 20, Monroe Township. It is a fairly shallow Brea sand well, depth 686 feet, and after shot will probably make a 4 or 5-bbl. pumper. In the southern part of Section 7, Jackson Township, Noble County, Warren Brothers and others drilled a test on the Florence Mitchell farm to a depth of 1,664 feet. It is a very light gas well, estimated at 50,000 feet, in the Berea grit. The top of the sand was reached at 1,656 feet and the bottom at 1,664 feet. The sand was very hard and somewhat broken. This well will not be shot.

The total for the work done in Southeast Ohio during the past week is three oil wells with an initial production of 32 bbls., two fair gas wells, and one gas well light enough to be considered a dry hole.

Drilling in Ohio

In Muskingum County, there are two wells which will shortly reach the sands. The Ohio Fuel Gas Co. has a test on the Gibson heirs' farm in Section 23, Brush Creek Township, drilling at 3,100 feet and in Section 3 of the same township, the Wittmer Oil & Gas Properties are down 3,000 feet on the Frank Drake farm. In the same township and Section 10, the Fritz Oil & Gas Co. has a rig standing on the Gertrude Spring farm. In Union Township, the Atha Oil Co. has made a location on the Jacob Morrison farm, Section 15. In Washington Township, Section 11, the Mehova Oil & Gas Co. has a rig standing on the J. A. Williams farm.

In Perry County, E. W. English and others have reached an interesting depth on the Hugh McTague farm in Section 12, Pike Township. It is drilling at 3,-250 feet. In Reading Township, the Hopewell Fuel & Gas Co. is drilling a second test on the Scallon heirs' farm in Section 14, and has reached 2,500 feet. No start has yet been made at the rig of W. G. Perrigo & Co. on the J. A. and W. E. Donnelly farm in Section 1, Jackson Township, which will be No. 6. In Madison Township, the Atha Oil Co. is drilling on the Samuel Frazier farm in Section 9, which at the present is down 2,700 feet.

WEST VIRGINIA

One fair gas well, two smaller gassers, and reports of two dry holes were reported from West Virginia.

In Curtis district, Roane County, the Reedy Oil & Gas Co. completed a fair well in No. 4 on the L. M. Riddle farm. It is showing for over 500,000 feet a day from the Salt sand at a depth of 1,825 feet. The well was not shot. In Monongalia County, the Manufacturers Light & Heat Co. drilled its No. 2 on the Hezikiah Barrackman farm in Battelle district to 3,633 feet and in the Bayard sand. It is a small gas well in that formation.

In Gilmer County, the Carnegie Natural Gas Co. drilled its test on the A. C. Law farm to a depth of 2,852 feet. No gas was found and the hole was dry in all formations and will be abandoned. This test was in Troy district. In DeKalb district of this county, the Pittsburgh & West Virginia Gas Co. completed its No. 7,571, a test on the Ida Black farm. It is a light gas well in the Injun sand at a depth of 2,054 feet.

In Marion County, the Owens Illinois Glass Co. drilled a test on the Samuel Nixon, Jr., farm in Grant district. The test was drilled to 2,650 feet and proved dry in all formations and will be abandoned.

Drilling in West Virginia

The deep test of the United Fuel Gas Co. on the J. W. Hinzman farm in Curtis district, Roane County, has now passed the extreme depth of 9,076 feet, which stands as a record for an eastern cable drilled well. Second only to this well in interest is the test of S. W. Meals and others on the George S. Davidson farm in Morgan district, Monongalia County. It is a wildcat and has reached 2,850 feet and shut down without a showing.

In Lincoln County the Hamlin Natural Gas Co. has started drilling on the Roy and Hal Adkins farm in Union district. In Sheridan district the Campbell Drilling Co. has reached 1,990 feet on the A. W. Wiley farm. In the same section the Kanawha Gas & Utilities Co. is down 1,235 feet on the Nona Johnson farm. In Harts Creek district, Frank Yates remains shut down on his own property after reaching 1,810 feet.

In Cabell County, R. H. Adkins and others are drilling on the B. S. Perry farm and have reached 3,340 feet. This test is in McComas district. In Guyandotte district, D. H. Campbell and oth-

(Continued on Page 136)

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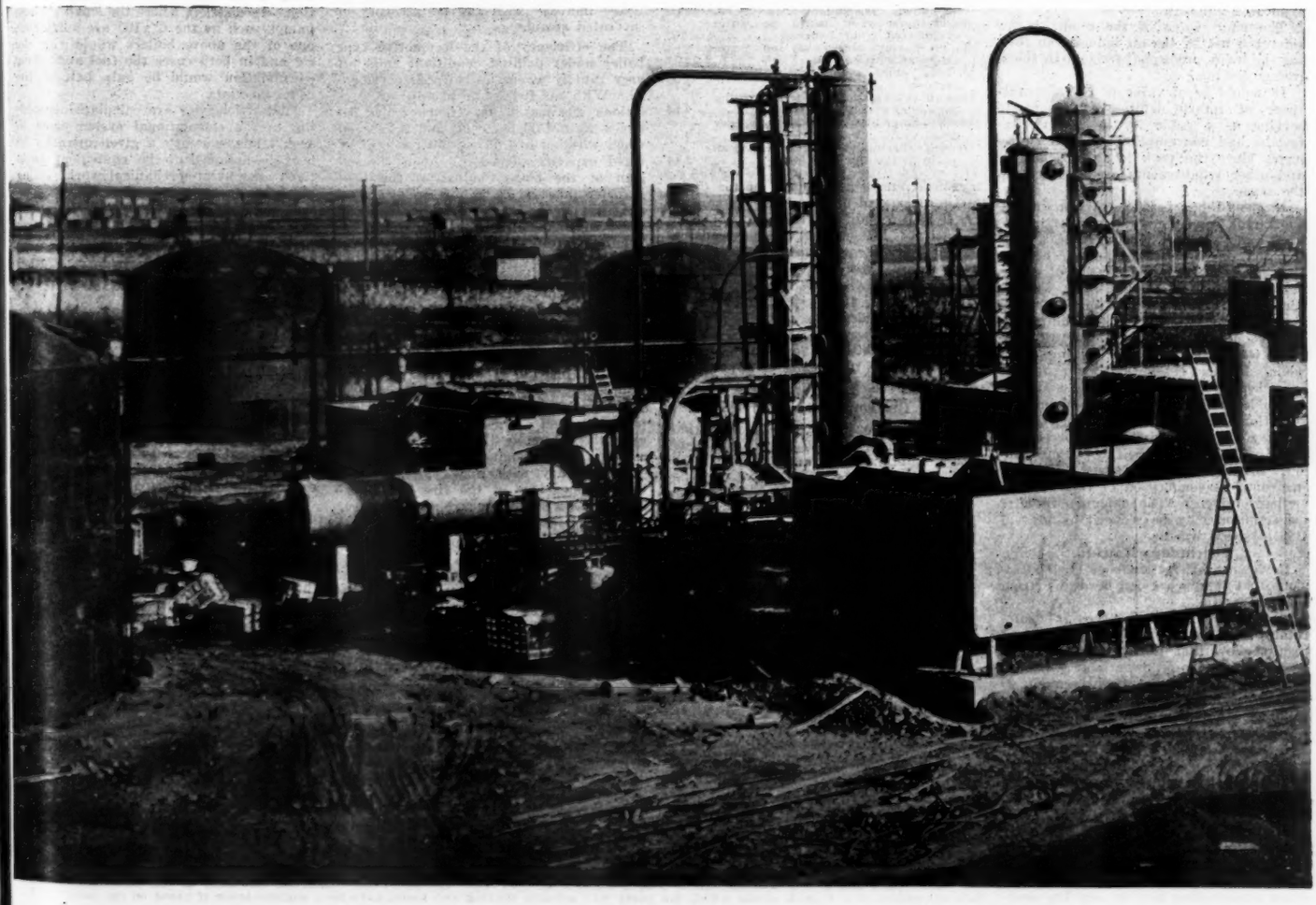


Steam Rotary Drilling Equipment Test

Report of Research Committee of American Society of Mechanical Engineers Summarized. First Test of Its Kind

By John T. Hayward
Barnsdall Oil Co.

Most oil well drilling is now done by steam-driven rotaries. In spite of the large number of rigs operating, the total amount of fuel used, and the importance of the matter, accurate test figures for the prime movers have been lacking.

Designers and operators of the equipment have both suffered seriously from the almost complete absence of reliable test data. Operations at a drilling rig are so varied and unlike those performed by steam engines in other industrial operations, that engineering handbook figures have been of comparatively little assistance, and attempts to improve the efficiency or to strike out on new lines have had to be made in the dark to a large extent.

In order to improve this situation, therefore, a co-operative research committee was organized by the American Society of Mechanical Engineers from among engineers in the Mid-Continent oil fields to carry out thorough tests on rotary drilling equipment. This report is the result, and is unique in the petroleum industry, as it presents the first and only tests ever made on such equipment. It contains the records and observations made in tests (1) on typical steam equipment used during the entire operation of drilling a deep well in Oklahoma City, Okla., to determine data on fuel, water, and steam consumption efficiencies, etc.; (2) on a turbine-driven slush pump used on a well drilled at Perry, Okla., to investigate the possibilities of this new type of equipment.

The main value of the report is for reference use by the oil industry in solving the many problems pertinent to steam rotary drilling.

It should be of value to the manufacturer of rotary drilling equipment in serving as a guide in the design, materials, and consumption of such equipment, since the peak loads, efficiencies, and other requirements are set forth in the reports.

It should be of value to the drilling contractor from the standpoint of investment and operation. Knowing peak loads imposed on various equipment, he can best judge the size and quality of equipment necessary to do the work, thereby decreasing his investment or increasing the operating efficiency of the equipment.

It should be of value to the oil company which contracts the drilling of its wells. In most cases, fuel and water are furnished by the oil company, and considerable saving will result if steam consumption is reduced by increasing the efficiency of steam distribution, thereby increasing operating efficiency of machinery. Much fuel may be saved by obtaining complete combustion of fuel by boiler improvement. The amount of water consumption may be reduced by prevention of steam wastage.

Conclusions Reached

Reviewing briefly some of the conclusions that it appears can be drawn from the test results.

Thermodynamically the regular steam-rotary rig is very inefficient. The test results show that the amount of steam consumed per horsepower hour delivered to the drawworks averaged between 40 and 50 pounds, and to the circulating fluid between 60 and 70 pounds. Now water rates of less than half this figure are easily obtainable with engines of comparable power working noncondensing between the temperatures prevailing at a drilling well. Working condensing, consumptions under one-quarter of those mentioned can be attained. Boiler efficiencies under field conditions lie between 40 and 60 per cent.* These low boiler efficiencies coupled with the high steam consumption lead to very low overall thermal efficiencies, fuel to useful work.

The thermal efficiencies of the direct-acting slush pumps were 4 to 4.5 per cent, and that of the turbine-driven slush pump 8 per cent. The overall thermal efficiency of the drilling engine and boiler in the Oklahoma City test was 3.34 per cent and that of the direct-acting slush pump and boiler 2.44 per cent. A few of the more interesting figures are given in Table 1:

TABLE 1—WATER, STEAM AND GAS

(Daily average data over 33-day drilling period, drilled to depth of 5,570 feet; 6⅝-inch drill pipe)

Water to location, lbs.	664,000
Water to location, bbls.	1,898
Water to boilers, lbs.	421,000
Water to boilers, bbls.	1,202
Water in boiler blowdown, lbs.	51,606
Water in boiler blowdown, bbls.	147.5
Water evaporated, lbs.	369,394
Water evaporated, bbls.	1,054.5
Steam to drilling engine, lbs.	80,776
Steam to slush pump, lbs.	243,450
Steam to boiler feed pump, lbs.	29,400
Steam to turbogenerator, lbs.	3,784
Steam lost in leakage, wash tub, etc., lbs.	4,210
Steam to mud jet, lbs.	7,550
Steam for cleaning bit, floor, etc., lbs.	224
Boiler pressure, gauge	225.6
Quality at boilers, per cent	98.4
Feedwater temperature, F.	91
Gas to boilers, cu. ft. (1,217 B.t.u. per cu. ft.)	629,000
Boiler efficiency, including heat to blowdown, per cent	56.2
Boiler efficiency, based on water evaporated, per cent	54.4
Boiler horsepower, including heat to blowdown (four boilers)	533
Boiler horsepower, including heat to blowdown (per boiler)	133.2
Boiler horsepower, based on water evaporated (four boilers)	502
Boiler horsepower, based on water evaporated (per boiler)	125.2
Drilling engine, thermal efficiency, per cent	6.13
Overall thermal efficiency of drilling engine and boiler, per cent	3.34
Slush pump, thermal efficiency, per cent	4.48
Overall thermal efficiency of slush pump and boiler, per cent	2.44

Slush pumps are usually of the direct acting type and use the steam nonexpansively. In addition, they run at comparatively low speeds, which leads to heavy initial condensation losses. The power stroke steam is condensed by coming in contact with the cold piston, cylinder walls, etc., and the condensate is reevaporated under the reduced pressure during the exhaust stroke, again cooling the metal. This heat exchange between the metal and the steam, of course, can be reduced by superheating.

Oklahoma City Figures

The Oklahoma City figures showed that the direct-acting slush pump consumed about two-thirds of the total steam consumed at the location. It follows that any improvement made in the steam economy of the pump will be reflected to a proportional extent in the overall consumption. The object of the test at Perry was to investigate the possibilities of one such line of improvement. At the Perry well a turbine-driven power type pump could be run alternately with a pump of the regular direct-acting type.

The size of the engine is governed by the maximum torque for accelerating the drill pipe during pulling out. This leads to an engine several times more powerful than required for the actual drilling. The horsepower developed for short periods during lifting may exceed 500, while the drilling load lies between 50 and 100 horsepower. This means that during most of the time that it is working, the engine is developing only 10 to 20 per cent of its full capacity, and, as it cannot be linked up, the steam consumption per horsepower hour delivered is high. It is the absence of a flywheel on the usual twin engine that prevents expansive working.

It is submitted that nothing is to be gained at present by going to boiler pressures higher than 250 pounds. Boiler upkeep and troubles due to untreated water become serious at the higher pressures. The incentives to the higher pressures have been the striving for higher fluid circulating pressures and to a lesser extent higher torque from the engine. Higher fluid pressures can be obtained with the turbine driven slush pump without higher steam pressures. If higher torques than can be attained with the regular 12"x12" twin engine are required, they can be obtained by increasing the cylinder dimensions at less cost than by raising the steam pressure above 250 pounds. Regarding efficiency, very little if anything is gained by going to higher pressures, the steam being used nonexpansively in the usual equipment, while radiation and initial condensation losses increase with the temperature of saturated steam.

The efficiency of the locomotive type boiler under drilling conditions falls off very rapidly when the boiler is overloaded. With gas firing and usual draft conditions, the maximum efficiency lies between 45 and 60 per cent, and is reached when working at 100 to 150 per cent of rated capacity, depending upon the design of the boiler. Most of the heat transfer takes place in the fire box, and the first 2 or 3 feet of the tubes, and the actual capacity of the boiler will depend, therefore, largely upon the dimensions of the fire box. Some of the 125 horsepower boilers differ from the 100 horsepower boilers only in having a few feet added to the length of the tube. As this additional heating surface is at the back end of the boiler, where the transfer rate is very low, the actual steaming capacity, instead of being 25 per cent, is probably only 2 or 3 per cent greater. With gas firing the efficiency and capacity depend to a considerable extent upon the volume of the fire box, and the comparative capacities of two boilers probably vary with some power of the linear dimensions of the fire box intermediate between the square and the cube.

At the Perry well, equipped with three 125 horsepower boilers, it was observed that the gas consumption increased one-third when one of the boilers was shut down, drilling conditions at the rig being unchanged.

Use of Insulation

Two things have opposed the insulation of locomotive type oil field boilers. Serious corrosion of the boiler shell has been experienced with certain types of insulation, and it is difficult to move the boiler without damaging the unprotected covering. The yearly fuel saving on a boiler in the open when insulated is between 5 and 10 per cent, and since the amount of heat saved by a dollar's worth of insulation is greater than that absorbed by the heating surface of a dollar's worth of boiler, insulation reduces the investment in boiler equipment required to generate a given quantity of steam.

The direct-acting steam pump has replaced its more efficient rival, the steam injector for boiler feed purposes. This has not been the case under similar conditions on the railways, and the matter would probably repay investigation and experiment. Reference to Table 1 shows that its boiler feed hardly consumed a quantity of steam equal to more than one-third of the steam consumed by the drilling engine.

By using the steam expansively at the engine and pump, and paying proper attention to the general details of the hookup, a rotary rig under Mid-Continent conditions, should easily be run from two superheated insulated boilers of 100 horsepower each. The turbine has already demonstrated its practicability under field conditions, and the above mentioned reduction in boiler capacity could be achieved without sacrificing speed or any other of the advantages of steam operation. In districts where the smaller slush pumps such as the 6"x16" are sufficient, one of the above boilers would run the rig and in both cases the fuel and water consumption would be only half of the usual amounts.

*All efficiencies are calculated according to the conventional system used in such trials, whereby a given quantity of heat is assumed to be equivalent to a fixed amount of mechanical work. Being the convention its adoption by the committee cannot be criticised in the present case, but the writer does not wish to be interpreted as approving the code.

RECEIVER FILES SUIT

William C. McDuffie, receiver in equity for the Richfield Oil Co. of California, last week filed suit in the United States District Court at Los Angeles for $347,717.03 and interest from the National Surety Co.

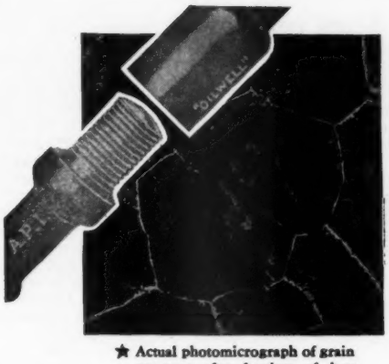
The suit had been filed in the Superior Court, but was transferred to Federal Court. It was asserted that the defendant company had furnished a fidelity bond for the Richfield company to indemnify that company for losses resulting from theft, larceny, embezzlement, or by other means, caused by the officers of the company.

The complaint mentioned as among those bonded J. A. Talbot, chairman of the board of the Richfield company; C. M. Fuller, president, R. W. McKee and other officers and employes.

TABLE 2—DATA ON PUMP OPERATIONS OBTAINED FROM TEST

Run No.	Date	Time	r.p.m.	Av. mean effective pressure	Ttl. indicated h.p. fluid end	Lbs. of steam per indicated h.p. hour	Thermal efficiency based on fluid indicated h.p.	Indicated pressure in the fluid cylinder, Head end Max.	Head end Min.	Crank end Max.	Crank end Min.	Fluid pressure at derrick	Apparent volumetric efficiency from cards, Head end	Apparent volumetric efficiency from cards, Crank end	Depth of well
					7"x20" Power Slush Pump										
1	6/4/31	6:15 p.m.	49	540	197	*32.6	8.27	1,050	347	806	300	525	96.6	95.2	4,590
2	6/5/31	10:15 a.m.	45	561	188	*35.9	7.40	1,093	300	862	298	550	96.5	97.5	4,640
3	6/5/31	4:15 p.m.	45	522	175	*40	6.7	937	331	713	324	525	95	97.9	4,640
4	6/5/31	7:40 p.m.	48	598	214	24.5	7.67	860	504	1,010	258	575	96.9	96.4	4,640
					14"x7½"x18" Direct-Acting Slush Pump										
5	6/5/31	5:50 p.m.	47	528	185	65.6	2.91	636	450	655	500	525	†94.6	†95.7	4,640

*Test No. 1 was at full designed speed; Nos. 2, 3 and 4 were at lower speeds. †The volumetric efficiency of the direct-acting pump was calculated on a 17-inch stroke which the pump was actually making and would have been slightly lower if based on the rated stroke.



★ Actual photomicrograph of grain structure after forging of box and pin.

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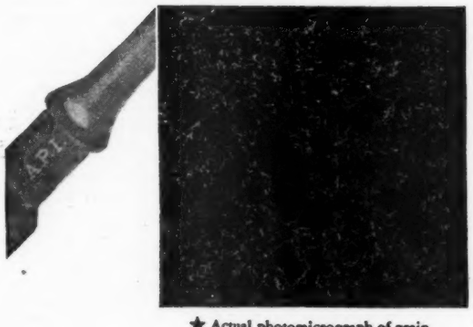

★ Actual photomicrograph of grain structure after *Normalizing*, only the *first step* in "Oilwell's" *Triple Treatment.*

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★ Photographed under microscope; magnified 100 times.

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New Low Prices in Refinery Products

All Areas Reflect 1931 Slump in Quotations. Average Oklahoma Refinery Revenue for Year $1.08 per Barrel

By C. O. Willson

Average open market quotations on the principal refinery products throughout the United States in 1931 were the lowest for any yearly period since petroleum refining became one of the major units of the industrial world. As the year ended, refiners everywhere, were hopeful that the disastrous year terminated a four-year period in which the refinery revenue from a barrel of crude oil has shown a yearly decline. When a study is made of the average prices for 1931 it seems reasonable to conclude that the coming year will at least not result in any lower prices with a strong possibility of a gradual return to prices more in line with normal conditions in the oil business.

The decline in yearly average prices during 1931 was general both as to products and refining areas. No product or group of refiners escaped a marketing condition brought about by world conditions both within and outside the oil industry.

Significance to Refiners

The significance of these exceptionally low prices for refined products can best be appreciated when they are considered in their relation to refinery revenue. The following table gives the revenue derived from a barrel of 36 degree gravity Oklahoma crude at a representative refinery having a well-balanced skimming and cracking operation based on average prices for 1931:

1931 REVENUE—AVERAGE REFINERY

Product—	Per cent yield	Gals.	Price per gal.*	Return per bbl.
Gasoline ...	65%	27.3	.0345	$.94
Kerosene ..	5%	2.1	.0231	.048
Gas oil ...	12%	5.04	.0127	.064
Fuel oil ..	10%	4.2	.0075	.032
Loss	8%			
Total revenue (per bbl.)				$1.084

*Based on low weekly quotations published in The Oil and Gas Journal.

EXPENSE—AVERAGE REFINERY

Crude oil at well	$.63
Pipe line (includes gathering charge).	.20
Operating expense (includes plant costs, sales, traffic, depreciation and obsolescene)	.35
Total	$1.19

This table shows that despite the lowest crude oil prices of the past 15 years, most refiners in Oklahoma due to the spot prices prevailing for refinery products were unable to break even in their operations and many operators showed substantial losses. The above tables, of course, only reflect average conditions and there were exceptional cases in which refiners were able to secure more than the open market quotations for their products with other cases in which they had lower operating costs. These were the exception, however, and only serve to emphasize the average conditions.

Taking the same yields, average prices for crude oil and refinery products when applied to 1928 operations reflect a substantially different condition in regard to refinery revenue in Oklahoma:

1928 REVENUE—AVERAGE REFINERY

Product—	Per cent yield	Gals.	Prices per gal.*	Return per bbl.
Gasoline ...	65%	27.3	7.95	$2.16
Kerosene ..	5%	2.1	5.17	.108
Gas oil ...	12%	5.04	2.47	.124
Fuel oil ..	10%	4.2	1.8	.076
Loss	8%			
Total				$2.468

*Based on low weekly quotations published weekly in The Oil and Gas Journal.

With an average price of $1.31 for crude oil and the same pipe line and operating expense as shown in the first table, the total expense per barrel of crude oil refined was $1.86 which, when compared with the revenue of $2.468 leaves a substantial profit per barrel for the refinery operation. Both tables show the importance of gasoline in the total revenue of a skimming and cracking operation.

The refinery prices used in these tables are based on open market quotations as published weekly in The Oil and Gas Journal. They represent prices at which the bulk of the products are moving as determined by reports of representative buyers and sellers. They do not include long-time contract shipments, although in many cases these contracts are based on published quotations. In some cases refiners sell their gasoline through their own stations or on contracts to jobbers and the net back to the refinery is more than in open market sales. However, due to the depressed condition of the retail market over the past year, the price advantage, if any, of these contracts was small. In the case of fuel oil some refiners have contracts with railroads based on the price for crude oil, and during 1931 these contracts averaged more than the open market quotations for the same grade of fuel.

Gasoline Prices

U. S. Motor gasoline in Oklahoma brought an average open market quotation of 3.45 cents in Oklahoma (Group 3) for 1931, a decline of 2.89 cents per gallon, or 45 per cent, when compared with 6.34-cent average for 1930, which was the previous low mark in yearly quotations. As shown in the accompanying table this average of 3.45 cents for 1931 is approximately one-third of the 10.55-cent price for 1925, the highest yearly average for the nine-year period ending December 31, 1931.

The decline in Oklahoma was representative of conditions in other areas. U. S. Motor gasoline in Pennsylvania dropped from an average of 7.37 cents for 1930 to 5.49 cents in 1931, and in California, where refiner market conditions were relatively better than they were in other parts of the United States, the average on U. S. Motor dropped from 8.06 cents in 1930 to 5.1 cents in 1931.

The same relative condition is found in other products. Grade A natural gasoline, which over a period of year follows the trend of the refinery gasoline market, averaged 3.22 cents in Oklahoma during 1931, which compares with an average of 5.36 cents in 1930 and a high for the past nine years of 12.02 cents in 1925.

Kerosene

Kerosene, which in general was a stronger product than gasoline throughout 1931, despite large declines in domestic and export consumption, nevertheless established new lows in average quotations. The 45 gravity grade in Pennsylvania brought an average price of 4.1 cents in 1931, which compares with 5.26 cents in 1930 and 6.67 cents in 1929. At Bayonne, N. J., the 41-43 water white grade brought an average of 5.45 cents in 1931 and 7 cents in 1930. In Oklahoma, which is representative of the Mid-Continent, the same grade averaged 2.31 cents in 1931, a decline of 35 per cent when compared with the 3.58-cent average for the previous year.

Fuel oil and gas oil prices were generally lower in all areas. Bunker C fuel along the Atlantic Seaboard, which is usually one of the most stable products of the refinery list declined to the lowest point in the history of the industry. Starting the year at $1.05 per barrel, the price declined to 60 cents per barrel late in the fall with an average price of 83.46 cents for the year. This compares with an average of $1.09 for the previous year.

In North Louisiana, which has a favorable local market, the 18-20 grade averaged 51.83 cents in 1931, a decline from 78.2 cents in 1930.

In Oklahoma a 32-36 industrial grade of gas oil brought an average price of 1.27 cents per gallon, the first time the product averaged under 2.25 cents in several years. The same price situation was effective in other areas.

Diesel oils and furnace oils, which are closely allied with the heavier fuels and gas oils in manufacture and sale, showed large price slumps in 1931. The 28-30 Diesel fuel at Bayonne, N. J., averaged $1.45 in 1931 and $1.99 in 1930.

Lubricants

In the lubricating list, steam refined stocks and bright stocks, which had favorable years in 1929 and 1930 except for short periods, showed steady declines throughout 1931 and the quotations effective in the late summer were the lowest since pre-war days. Pennsylvania grade bright stocks, which brought an average price of 47 cents in 1929, dropped to an average of 33.73 cents in 1930 and 20.94 cents in 1931.

The principal grade in Oklahoma—150-160 D color—averaged 16.31 cents in 1931, which compares with a high of

(Continued on Page 104)

AVERAGE PRICES ON REPRESENTATIVE CRUDE OILS AND REFINED PRODUCTS

	1931	1930	1929	1928	1927	1926	1925	1924	1923
OKLAHOMA—CRUDE OIL									
36 A.P.I. gravity, per bbl.*	$ .63	$1.23	$1.37	$1.31	$1.38	$2.13	$1.87	$1.63	$1.56
OKLAHOMA—REFINED PRODUCTS									
U. S. Motor Gasoline, per gal.	.0345	.0634	.0775	.0795	.0667	.1031	.1055	.0896	.0978
Grade A, 72-79.9, 375 e.p., rec. 90%, nat. gaso., per gal.	.0322	.0536	.0706	.0744	.0585	.0946	.1202	.0866	.0913
41-43, water white kerosene, per gal.	.0231	.0358	.0517	.0517	.0461	.0727	.0445	.0449	.04
24-26 fuel oil per bbl.	.4356	.7043	.706	.7694	.9792	1.3072	1.0908	.954	.9511
32-36 gas oil, per gal. (industrial)	.0127	.0227	.0265	.0247	.0299	.0419	.0368	.0291	.0266
200 vis., 3 color, 23-28 cold test neutral oil, per gal. ...	.0924	.1059	.0966	.0947	.1032	.1072	.1139	.1308	.1317
124-126 wax, per lb.	.0174	.0216	.0321	.0394	.0294	.0471	.0516	.0446	.0254
150-160 D color bright stock	.1631	.2977	.3368	.2310	....	....	....	....	....
PENNSYLVANIA—CRUDE OIL									
Crude oil in National Transit Lines, per bbl.	$1.81	$2.55	$3.69	$2.98	$2.87	$3.51	$3.50	$3.60	$3.33
PENNSYLVANIA—REFINED PRODUCTS									
U. S. Motor Gasoline, per gal.	.049	.0737	.0905	.0982	.09	.1273	.1348	.1224	.1352
43 prime white kerosene, per gal.	.04	.0501	.0651	.0635	.0646	.0885	.0656	.0671	.0652
30-34 fuel oil, per gal.	.0277	.0386	.0441	.0449	.0477	.0591	.053	.0527	.054
Pennsylvania bright stock, per gal.	.2094	.3373	.4745	.3186	.3326	.3954	.3824	.3655	.3337
CALIFORNIA—CRUDE OIL									
25 A.P.I. gravity, Signal Hill, per bbl.	$ .76	$1.16	$1.05	$ .96	$1.00	$1.37	$1.35	$1.06	$ .74
CALIFORNIA—REFINED PRODUCTS									
58-60 U. S. Motor Gasoline, per gal.	.0510	.0806	.0849	.0919	.0873	.1134	Average prices on refined products for 1925, 1924 and 1923 on comparable basis not available.		
75-78, 375-390 e.p., natural gasoline, per gal.	.0418	.0712	.0803	.0726	.093	.1465			
38-40 kerosene, per gal.	.0425	.0455	.0569	.0611	.07	.0745			
15-20 fuel oil at tidewater, per bbl.	.5836	.6346	.6724	.8892	.9221	.9813			

*Based on posted price for Oklahoma, Kansas and North Texas.

Note: Average prices on refined products are based on low open market quotations as published weekly in The Oil and Gas Journal. Crude prices are daily averages based on posted schedules of major buyers.

The Oil and Gas Journal's Table Showing Low Average Prices for 1931, 1930 and 1929 on Representative Refinery Products (f.o.b. Plants and Terminals) for Domestic and Export Movement. Table Also Gives Low Average Prices for First Six Months and Second Six Months and the Yearly Highs and Lows

	1931					1930					1929				
				Av. price					Av. price					Av. price	
GASOLINE AND NAPHTHA—	Av. pr.			1st	2nd	Av. pr.			1st	2nd	Av. pr.			1st	2nd
Oklahoma (Group 3):	for yr.	High	Low	6 mos.	6 mos.	for yr.	High	Low	6 mos.	6 mos.	for yr.	High	Low	6 mos.	6 mos.
50-52 450 endpoint	.0336	.04½	.02⅛	.0336	.0336	.0591	.07	.04¼	.0648	.0538	.0721	.08¾	.06½	.0725	.0718
56-58 450 endpoint	.0330	.04¾	.02	.0325	.0334	.0571	.07	.04	.0626	.0521	.0711	.08¾	.06½	.0726	.0698
U. S. Motor	.0345	.05	.02¼	.0335	.0354	.0634	.075	.04	.0688	.0584	.0775	.09¼	.0685	.0779	.0771
60-62 437 endpoint	.0353	.05	.02¼	.0346	.0360	.0616	.075	.04⅛	.0679	.0557	....	....	....	....	....
60-62 400 endpoint	.0366	.05⅛	.02⅜	.0357	.0376	.0674	.0775	.04¼	.0721	.0631	.0808	.0969	.0732	.0818	.0799
64-66 375 endpoint	.0399	.05⅝	.02¾	.0392	.0406	.0704	.0812	.04⅝	.0767	.0646	.0855	.0983	.07½	.0872	.0850
68-70 360 endpoint	.0420	.05½	.02⅞	.0422	.0418	.0707	.08½	.05	.0771	.0647	.0837	.09¾	.07¾	.0859	.0816
North Texas:															
U. S. Motor	.0330	.05	.02⅛	.0314	.0346	.0572	.07	.04	.0627	.0521	.0756	.08⅞	.06¼	.0730	.0701
60-62 400 endpoint	.0357	.05⅛	.02¼	.0351	.0363	.0601	.07½	.04¼	.0656	.0550	....	....	....	....	....
64-66 390 endpoint	.376	.05¼	.02½	.0368	.0385	.0631	.07½	.04½	.0694	.0573	.0774	.09¼	.07¼	.0970	.0759
64-66 375 endpoint	.0397	.05⅜	.02¾	.0389	.0404	.0658	.07⅝	.04¾	.0726	.0594	.0798	.09½	.07¼	.0816	.0781
North Louisiana:*															
U. S. Motor	.0389	.05¼	.02⅝	.0379	.0399	.0675	.07¾	.04¾	.0713	.0639	.0793	.09¾	.07	.0797	.0790
Pennsylvania:															
52-54 Naphtha	.0490	.06	.04	.0535	.0446	.0703	.07¾	.06	.0733	.0675	.0829	.09	.07¼	.0847	.0811
U. S. Motor	.0490	.06¼	.04¼	.0546	.0434	.0737	.08¼	.06¼	.078	.0697	.0905	.10	.07¾	.0941	.0871
60 Gasoline	.0498	.06½	.04½	.0563	.0434	.0756	.08½	.06½	.0801	.0715	.0935	.10½	.08	.0980	.0892
64 Gasoline	.0575	.07	.05	.0608	.0543	.0808	.09	.07	.0841	.0777	.1016	.12	.08½	.1062	.0971
California:															
U. S. Motor	.0510	.08½	.03	.0481	.0538	.0806	.09½	.06½	.0806	.0806	.0889	.10	.06	.0877	.09
Gulf Coast (Export):															
58-60 U. S. Motor	.0430	.05¼	.03⅛	.0453	.0406	.0751	.08½	.05⅛	.0816	.0691	.0849	.08½	.08¼	.0848	.085
60-62 400 endpoint	.0454	.05½	.03⅝	.0479	.0428	.0838	.09½	.05½	.0916	.0766	.0949	.09½	.09½	.0948	.095
61-63 390 endpoint	.0480	.05⅞	.03¾	.0521	.0438	.0865	.09¾	.05¾	.0941	.0795	.0974	.09¾	.09½	.0973	.0975
64-66 375 endpoint	.0497	.06⅛	.03¾	.0542	.0452	.0888	.10	.06	.0956	.0826	.0999	.10	.09¾	.0998	.10

*Louisiana, Arkansas and Mississippi delivery.

NATURAL GASOLINE—															
Oklahoma (Group 3):															
Grade A, 72-79.9, 375 e.p., rec. 90%	.0322	.05¼	.01¾	.0265	.0379	.0536	.06½	.03¼	.0587	.0489	.0706	.08	.06¼	.0755	.0658
Grade AA, 80-87.9, 375 e.p., rec. 90%	.0300	.05	.01⅝	.0241	.036	.0524	.06½	.03	.0571	.0481	.0683	.08	.05½	.0716	.0614
Grade B, 76-83.9, 375 e.p., rec. 85%	.0291	.05	.01⅜	.0226	.0356	.0494	.06½	.02¾	.0522	.0471	.0637	.07¾	.05¼	.0656	.0619
Grade BB, 84-92, 375 e.p., rec. 85%	.0281	.05	.01⅜	.0211	.0356	.0488	.06½	.02¾	.0509	.0468	.0630	.07¾	.05¼	.0645	.0616
Grade C, 80-92, 375 e.p., rec. 78%	.0279	.05	.01¼	.0208	.0350	.0483	.06½	.02¾	.0502	.0466	.0618	.07½	.04⅞	.0623	.0613
California:															
75-78 375-390 endpoint	.0418	.05¾	.01¾	.0370	.0466	.0712	.08½	.05¾	.0753	.0675	.0803	.09	.06	.0777	.0828
BURNING OIL—															
Oklahoma (Group 3):															
41-43 water white Kerosene	.0231	.03	.01¾	.0262	.02	.0358	.04⅛	.03	.0406	.0314	.0517	.06¾	.04⅛	.0549	.0487
42-44 water white Kerosene	.0249	.03¼	.02	.0281	.0216	.0390	.04⅝	.03¼	.044	.0341	.0573	.07⅛	.04⅜	.0617	.0532
North Texas:															
41-43 water white Kerosene	.0225	.03	.01¾	.0255	.0195	.0348	.04⅛	.03	.0394	.0305	.0517	.07¼	.04	.0568	.0468
Pennsylvania:															
43 Kerosene, prime white	.0400	.05	.03⅝	.0444	.0355	.0501	.05¾	.04¼	.0546	.0460	.0651	.07¼	.05¾	.0690	.0614
45 Kerosene, water white	.0410	.05¼	.03½	.0453	.0366	.0526	.06	.04¼	.0568	.0487	.0667	.07¼	.06	.0703	.0632
California:															
38-40 w. w. Kerosene (high burning test)	.0425	.05	.03¼	.0436	.0413	.0455	.05	.04	.0446	.0463	.0569	.06½	.05	.0620	.0520
Gulf Coast (Export):															
41-43 prime white	.0371	.04¼	.03¼	.0409	.0349	.0588	.07	.04	.0632	.0547	.0714	.07¾	.06⅝	.0728	.07
41-43 water white	.0424	.05¼	.03½	.0499	.0372	.0668	.08	.05	.073	.0610	.0814	.08¾	.07⅝	.0828	.08
FUEL OIL—															
Oklahoma (Group 3):															
Below 18 Fuel Oil, per bbl.	.2904	.42½	.20	.3510	.2298	.5225	.70	.40	.613	.438	.526	.70	.45	.499	.5530
24-26 Fuel Oil, per bbl.	.4356	.65	.30	.5240	.3471	.7043	.90	.55	.792	.623	.706	.90	.60	.646	.7630
32-36 Gas Oil (industrial)	.0127	.02	.00⅝	.0143	.0111	.0227	.02⅞	.02	.0245	.0211	.0265	.03	.02¼	.0262	.0268
38-40 Straw Distillate	.0185	.02¾	.01¼	.0220	.0150	.0294	.03⅝	.02¾	.0313	.0275	.0365	.04⅜	.03¼	.0363	.0367
North Texas:															
Below 20 Fuel Oil, per bbl.	.2663	.40	.15	.2740	.2587	.4649	.65	.30	.547	.39	....	....	....	....	....
32-36 Gas Oil (industrial)	.0118	.02	.00⅝	.0137	.0099	.0215	.02⅞	.02	.0231	.0201	.0267	.03⅛	.02¼	.0266	.0269
38-40 Straw Distillate	.0172	.02¾	.01⅛	.0206	.0138	.0287	.03¾	.02¾	.03	.0275	.0359	.04¼	.03⅛	.0359	.0359
North Louisiana:*															
18-20 Fuel Oil, per bbl.	.5183	.70	.35	.6135	.4230	.0782	.85	.70	.80	.76	.7428	.80	.70	.72	.76
Gulf Coast (South Texas):															
Gas Oil	.0259	.03⅛	.02⅛	.0292	.0226	.0375	.04	.03½	.0381	.0370	.0387	.04¼	.03½	.0378	.0397
Bunker C Fuel (cargo lots), per bbl.	.5404	.65	.40	.6346	.4462	.7130	.80	.62½	.714	.712	.7397	.80	.65	.756	.72
Pennsylvania:															
30-34 Fuel Oil	.0277	.03½	.02¼	.0295	.0259	.0386	.04¾	.03	.0426	.0349	.0441	.04¾	.04	.0454	.0428
California:															
15-19 Fuel Oil, Bunker (at tidewater)	.5836	.60	.55	.5673	.60	.6346	.70	.55	.65	.62	.6724	.85	.65	.69	.66
27 plus Diesel, per bbl.	.7510	.80	.70	.7462	.7558	.8365	.90	.75	.85	.82	.90	1.15	.90	.90	.90

*Louisiana, Arkansas and Mississippi delivery.

LUBRICATING OIL AND WAX—															
Oklahoma (Group 3):															
100 vis., 3 color	.0432	.04¾	.03¾	.0473	.0391	.0545	.05¾	.04¾	.0556	.0534	.0561	.06	.05¼	.0547	.0575
180 vis., 3 color	.0798	.08½	.07½	.0831	.0764	.0927	.10	.08½	.0986	.0872	.0915	.09¾	.08¾	.0894	.0934
180 vis., 5 color	.0741	.07¼	.06¾	.0775	.0708	.0838	.09½	.07¼	.09	.0780	.0850	.09	.08¼	.0840	.0859
200 vis., 3 color	.0921	.09¾	.08½	.0944	.0898	.1059	.11½	.09¾	.111	.1012	.0966	.10¾	.09¼	.0938	.0994
240 vis., 5 color	.1004	.11¼	.09	.1071	.0937	.1171	.13½	.11¼	.128	.1162	.1155	.12¾	.10¾	.1116	.1194
Cylinder Stocks: 600 steam ref., lt. green	.0486	.07	.04	.0550	.0420	.0831	.10	.07	.09	.0767	.1098	.14½	.08	.1042	.115
150-160 vis., D color, Bright Stock (10-25 C.T.)	.1631	.19½	.12½	.1568	.1692	.2977	.37	.18	.366	.23	.3368	.37	.28	.31	.36
Waxes: 124-126 White Crude Scale Wax	.0174	.02	.01½	.0185	.0162	.0216	.02¾	.01¾	.0234	.0199	.0321	.05	.02½	.0364	.0279
Pennsylvania: 200, 3 color	.2031	.22½	.17¼	.2007	.2056	.2111	.25½	.16½	.246	.1787	....	....	....	....	....
600, steam refined	.1014	.14¼	.07½	.0825	.1203	.1501	.24	.09	.218	.1045	....	....	....	....	....
600, Pennsylvania flash	.1425	.19	.11	.1235	.1675	.2337	.32	.14½	.298	.1741	.3646	.41½	.30	.41	.321
Pennsylvania Bright Stocks (Below 35 C.T.)	.2004	.29	.16¼	.1784	.2405	.3073	.43	.19	.39	.23	.4745	.57	.39	.452	.496
Gulf Coast (South Texas):															
200 vis., 3 color, pale oil	.0775	.08¼	.07	.0807	.0743	.0912	.09½	.08¼	.0922	.0901	.890	.09½	.08½	.089	.089
200 vis., 5-6 color, red oil	.0699	.07½	.06	.0731	.0666	.0829	.08¾	.07	.0831	.0828	.0779	.08½	.07	.0778	.078
California: 200 vis., 2½-3 color	.0950	.10	.09	.0988	.0912	.1074	.11½	.10	.11	.1050	.1150	.11½	.11½	.115	.115
Red Neutral: 200 vis., 4½-5 color	.0956	.09¾	.04½	.0950	.0962	.1063	.11	.09½	.11	.1028	.11	.11¼	.11	.11	.11

(Continued on Page 104)

PETROLEUM REFINERIES

Complete design and construction ready for operation of modern refinery plant and equipment embodying the fundamental principles of profitable refining —

Flexibility and Sustained Operation — as the result of adequate design and dependable construction.

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Low Operating Costs — because of efficient basic design.

Low Maintenance — minimum upkeep as the result of scientific selection of materials and methods of construction.

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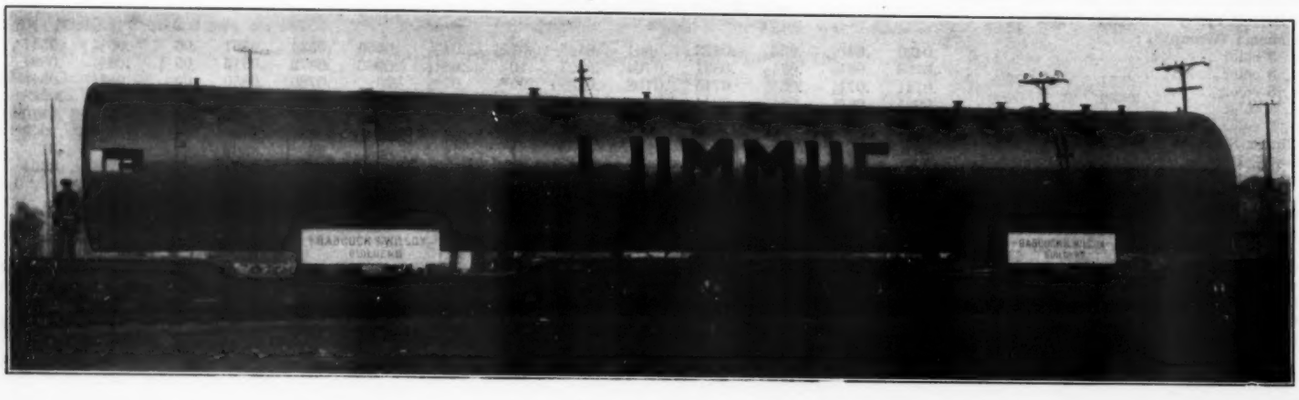

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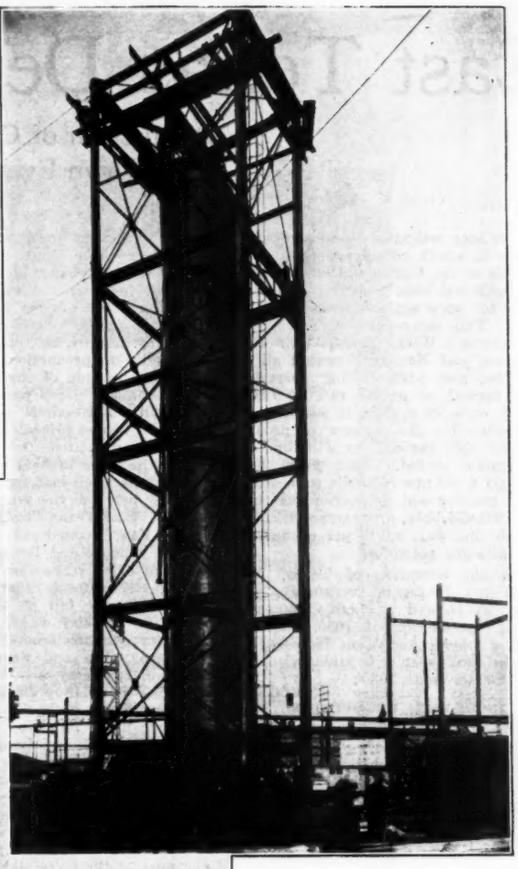
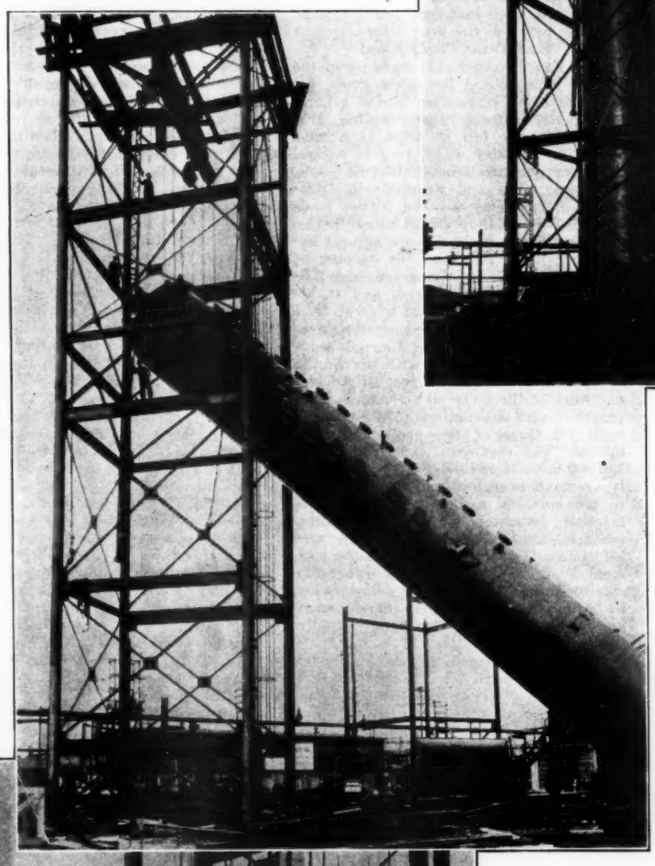
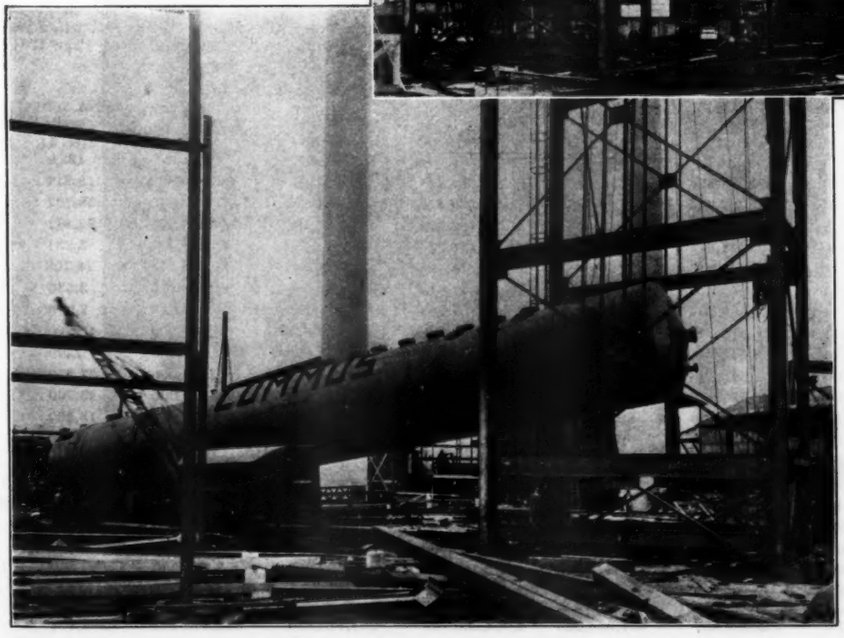




This bubble tower weighing 200 tons is twelve feet in diameter and over ninety-three feet long. The tower will operate under a pressure of 150 lbs. per square inch and temperature of 700 F. All the joints and seams of this tower were made by the Babcock & Wilcox fusion welding process and were X-ray photographed to insure perfection.



This is part of a modern cracking coil unit of unusual proportions now being constructed by THE LUMMUS COMPANY for the TIDE WATER OIL CO., at Bayonne, N. J.

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East Texas Depressed Whole Industry

Production of Crude Oil in United States Last Year Held Down Everywhere Else by Continued Proration

By James McIntyre

It has been estimated by oil men whose opinion is worth consideration that the oil fields of the United States could produce 5,000,000 bbls. a day if there was reason for such an enormous crude oil output. This figure is not fantastic by any means. With Texas, California, Oklahoma and Kansas removing all restrictions, and with drilling operations up to normal, or at the rate of 15,000 new oil wells in a year, it would easily be possible for the country to produce 5,000,000 bbls. per day for a limited but considerable period. Last year, however, only 6,703 new oil wells were drilled in this country and production was held to 845,803,454 bbls., an average of 2,317,270 bbls. per day, or 46 per cent of its easily attained potential.

With the exception of Texas, New Mexico and Michigan, every state producing oil showed a decline compared with the production of 1930. Here is how and where production increased or decreased last year, compared with the totals for the year 1930:

INCREASED PRODUCTION

	Bbls.
Texas	36,216,473
New Mexico	4,982,968
Michigan	144,000
Total increase	41,343,441

DECREASED PRODUCTION

	Bbls.
California	39,242,867
Oklahoma	40,410,743
Arkansas	4,488,375
Kansas	3,167,009
Wyoming	3,047,745
Louisiana	1,024,734
Illinois	934,000
Pennsylvania	1,056,000
Ohio	1,165,000
Kentucky	972,000
West Virginia	634,000
Montana	356,807
New York	459,000
Colorado	130,777
Indiana	159,000
Tennessee	13,000
Total decline	97,280,857
Net decline in U. S.	55,937,416

East Texas Responsible

Texas' big increase in production may be altogether attributed to the East Central and East Texas divisions, as all the other Texas divisions showed marked decreases in their crude output as compared with the previous year.

Curtailment of production in one form or another was practiced in every state producing oil. A vast number of small wells were shut in a part of the time last year inside and outside the prorated states, because it did not pay to operate them at the existing crude oil prices, and the number of wells reported as producing at the close of the year was only 299,104, as compared with 327,268 wells on production at the close of 1930. A portion of the wells shown in the declining figures were abandoned altogether. The others were kept idle awaiting higher prices. As a result, the average production per well remained about the same in both years, 7.75 bbls. per day per well last year and 7.60 bbls. per day per well the year before.

East Texas Crude Flood

The East Texas Field, made up of the Joiner, Kilgore and Longview Pools, did more to bring stagnation to the general oil industry than any other one thing. Discovered in the fall of 1930 at a time when the industry was trying to control an overproduction from California pools, Oklahoma City and Seminole in Oklahoma and several western Texas pools and the Van Field in East Central Texas, the East Texas Field did not assume importance until, following the opening of the Joiner Pool, the Longview and Kilgore Pools were discovered, and it became definitely known that a great field had been opened. In the annual review of 1930 The Oil and Gas Journal headed its story of this field with the words, "May Be the World's Largest Oil Field," but some of the large oil companies were skeptical and did not try to get acreage until all three of the pools had been opened. The vast area, occupying about 120,000 acres, was solidly leased up, mostly by small operators and by newcomers in the business, among whom were numerous promoters of stock selling schemes. So much of the acreage was held in small parcels, ranging all the way from 1 acre upward, and its ownership was so diversified, that it was impossible to bring about an orderly development and production began to mount rapidly after February.

When the big companies did get in by purchasing the interests of many of the "little fellows," there was not much improvement in the drilling situation.

Daily production in February averaged 26,062 bbls.; in March, 93,579 bbls.; in April, 249,325 bbls., continuing upward until it reached a one-day peak in August exceeding 1,000,000 bbls., with an average for the whole month of August of 542,381 bbls. brought down by the application of martial law in the field by order of Governor Sterling.

Small Financial Return

Meanwhile, the price of East Texas crude, which at first was above $1 per barrel, dropped by degrees to an average of 13 cents per barrel in the week ending August 12. The enforced curtailment of production by the governor's order affected the price of crude favorably, and it advanced to an average of 54 cents in the week ending September 2; to 66 cents in the week ending September 9, and to 82 cents as an average price in the week ending November 2, which price maintained to the end of the year.

Small operators and royalty owners, who for months objected strenuously to any curtailment of drilling or production, abandoned their attitude when they found that they could get much more money for much less oil and still retain part of their product in the ground. For example, the producers and royalty owners received $626,465 for 4,818,961 bbls. of oil produced in the week ending August 12, while in the last week in December they received $1,669,680 for 2,036,195 bbls. of oil. Thus they received about two and one-half times as much money for less than half the quantity of crude.

Big First Year Output

In 1930 the Joiner Pool in Rusk County produced only 29,122 bbls., its total for October, November and December. There was no other production in East Texas. In 1931 Joiner produced 37,932,810 bbls., Kilgore 43,537,815 bbls. and Longview 26,257,287 bbls. The combined fields produced 107,727,912 bbls., or an average over the entire year of 295,145 bbls. per day. How much this field could have produced is a question. In the last half of the year it could easily have produced the capacity of the pipe lines and railroad facilities available at the time, and not been opened to its limit. In the biggest calendar year experienced by the Seminole Field (comprising then five pools) it produced 135,951,098 bbls., and its biggest production for 12 months, or from March 1, 1927, to February 28, 1928, was 141,491,000 bbls. Seminole was the largest high grade oil producer the country had known up to its time. East Texas can easily exceed the best 12-month record of which Seminole was capable, and owing to its immense productive acreage, estimated now at about 90,000 acres, it is believed it could exceed the best 12-month production of which any other high grade field in the United States is capable, although there may be Californians who will dispute this in favor of Kettleman Hills.

Whatever may be the fate of enforced proration by the Texas State government, it is considered unlikely that the producers of East Texas would permit the field to run wild as it was threatening to do when Governor Sterling intervened last summer. The phantom of 5 and 10-cent oil would be enough to stiffen them into voluntary action to prevent overproduction.

The Van Pool's Big Showing

The East Central Texas area, or Mexia fault field, developed nothing new of importance in 1931 in the way of discoveries, but the Van Field, in Van Zandt County, showed a very considerable increase in oil production, even though it was held back by unitization and voluntary curtailment. The Van Field has a large actual potential production, but it was kept down to an average well below 50,000 bbls. per day through the year. Its total production of 15,542,023 bbls. in 1931 was an increase of 8,011,801 bbls. over its production of 7,530,222 bbls. in 1930. The whole area produced 19,164,902 bbls. last year. Of this, the once famous Mexia Field produced only 1,186,770 bbls., and Powell 1,362,278 bbls. Mexia was down to 2,989 bbls. per day in December and Powell to 2,461 bbls. The whole division produced 13,168,608 bbls. in 1930 and Van's big production increased it by 5,996,294 bbls. last year.

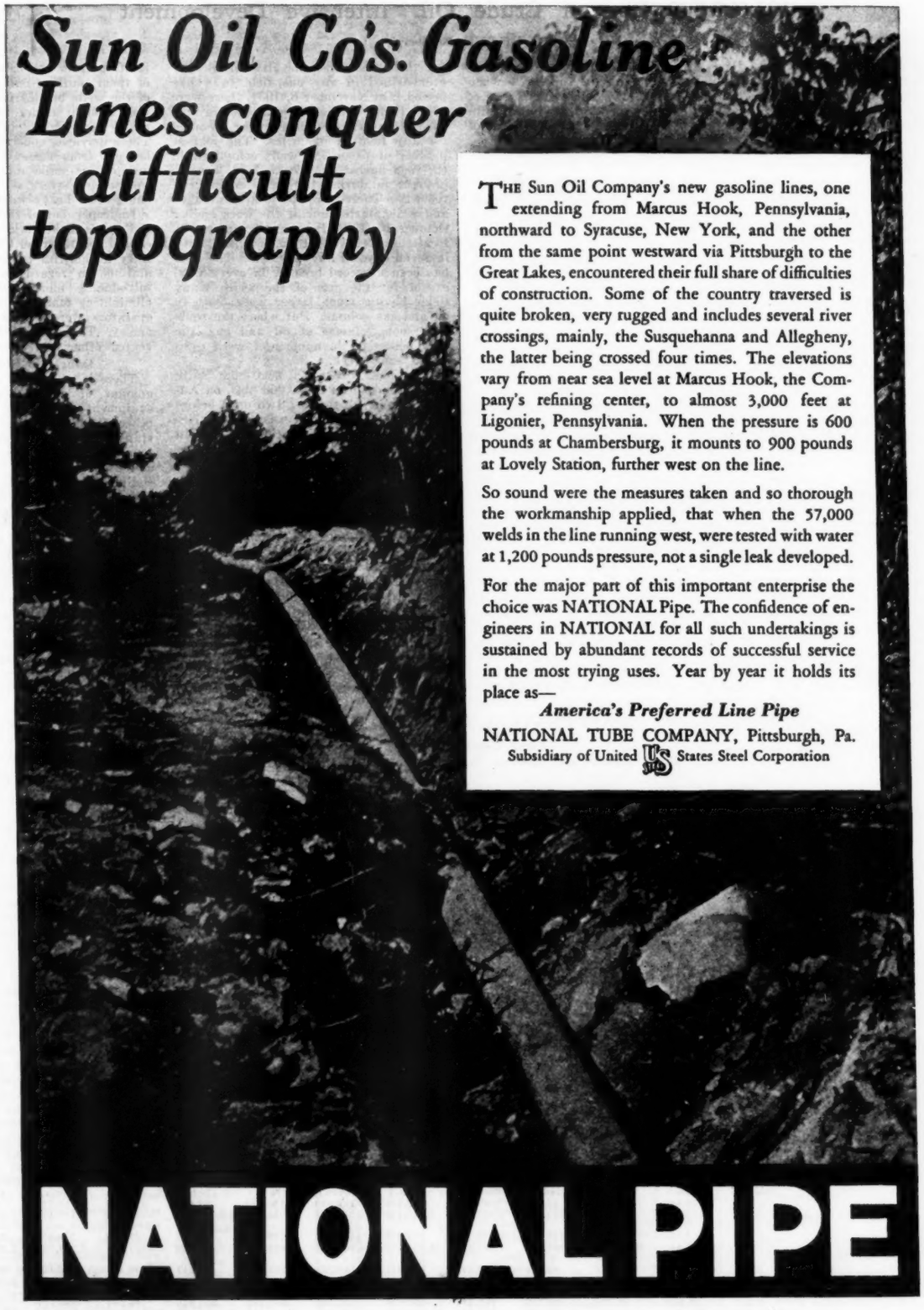
Older Texas Fields Slump

The North Texas, or Wichita Falls Field, dropped in production from 32,299,098 bbls. in 1930 to 21,850,878 bbls. in 1931. Wichita County, where the Burkburnett, Electra, K-M-A and Iowa Park Fields are located, dropped from 8,875,852 bbls. to 6,644,987 bbls. Archer County fell off from 6,023,760 bbls. to 4,384,656 bbls.; Wilbarger County slumped from 7,867,089 bbls. to 4,167,464 bbls., and Young County from 5,229,401 bbls. to 4,231,600 bbls. Those are the major producing areas in the district. The lesser fields showed losses and gains, but they were of little consequence in the general picture. The whole area declined 10,448,220 bbls. in production in 1931 as

(Continued on Page 126)

PRODUCTION IN THE UNITED STATES—1924 TO 1931, INCLUSIVE

	1924 (bbls.)	1925 (bbls.)	1926 (bbls.)	1927 (bbls.)	1928 (bbls.)	1929 (bbls.)	1930 (bbls.)	1931 (bbls.)	No. active wells Dec. 31, 1931	Dly. av. prod. per well (bbls.)
California	230,063,117	230,147,342	224,117,013	230,751,463	231,982,597	292,036,911	228,091,899	188,829,032	8,911	58.07
Oklahoma	176,206,397	173,270,063	177,651,198	276,022,024	247,500,851	252,229,474	216,114,591	175,703,848	58,707	8.20
Texas	135,361,378	144,783,451	172,545,278	220,030,512	255,354,357	298,713,694	292,392,102	328,608,575	22,431	40.14
Arkansas	48,167,912	78,407,138	58,729,606	40,411,375	32,137,934	25,443,570	20,114,782	15,626,407	3,231	13.25
Kansas	29,671,551	38,151,622	41,346,511	41,943,577	38,150,878	40,658,170	42,123,347	38,956,338	18,708	5.71
Wyoming	29,251,070	29,229,303	25,465,553	20,983,675	21,403,460	19,071,618	17,740,017	14,692,272	3,536	11.38
Louisiana	20,638,051	21,537,564	24,283,144	24,330,954	22,863,564	21,137,263	23,881,270	22,856,536	2,976	21.04
Illinois	8,041,000	7,862,000	7,770,500	6,873,000	6,475,000	6,356,500	5,651,000	4,717,000	15,300	.85
Pennsylvania	7,529,100	7,831,200	8,971,200	9,642,000	9,914,000	11,804,800	12,918,000	11,862,000	77,300	.42
Ohio	6,797,000	7,175,000	7,307,500	7,542,500	7,105,000	6,730,200	6,483,000	5,318,000	37,250	.40
Kentucky	7,396,900	6,770,000	6,297,200	6,590,000	7,350,000	7,821,400	7,462,000	6,490,000	15,700	1.13
West Virginia	5,924,000	5,780,000	5,962,400	6,033,000	5,746,000	5,608,600	5,111,000	4,477,000	15,200	.81
Montana	2,785,724	4,122,653	7,744,605	5,171,883	3,998,549	3,827,067	3,203,808	2,847,201	1,429	5.46
New York	1,482,000	1,660,000	1,934,200	2,237,000	2,579,000	3,345,600	3,854,000	3,395,000	14,710	.63
Colorado	391,922	1,171,625	2,776,442	2,722,670	2,744,184	2,361,595	1,623,639	1,492,862	244	16.76
New Mexico	81,800	1,096,617	1,695,645	1,214,254	973,891	1,803,261	10,377,415	15,360,383	441	95.43
Indiana	936,000	828,000	785,200	852,500	1,054,000	905,800	990,000	831,000	2,480	.92
Tennessee	6,300	23,000	44,200	62,200	50,000	20,000	20,000	7,000	....	....
Michigan	.....	.....	103,000	436,100	613,000	4,391,200	3,589,000	3,733,000	550	18.59
Miscellaneous	.....	.....	30,780	.....	.....	.....	.....	.....	.....	....
Total	720,731,222	759,846,578	775,561,175	903,850,687	897,995,265	1,004,266,723	901,740,870	845,803,454	299,104	7.75


Sun Oil Co's. Gasoline Lines conquer difficult topography
THE Sun Oil Company's new gasoline lines, one extending from Marcus Hook, Pennsylvania, northward to Syracuse, New York, and the other from the same point westward via Pittsburgh to the Great Lakes, encountered their full share of difficulties of construction. Some of the country traversed is quite broken, very rugged and includes several river crossings, mainly, the Susquehanna and Allegheny, the latter being crossed four times. The elevations vary from near sea level at Marcus Hook, the Company's refining center, to almost 3,000 feet at Ligonier, Pennsylvania. When the pressure is 600 pounds at Chambersburg, it mounts to 900 pounds at Lovely Station, further west on the line.
So sound were the measures taken and so thorough the workmanship applied, that when the 57,000 welds in the line running west, were tested with water at 1,200 pounds pressure, not a single leak developed.
For the major part of this important enterprise the choice was NATIONAL Pipe. The confidence of engineers in NATIONAL for all such undertakings is sustained by abundant records of successful service in the most trying uses. Year by year it holds its place as—
America's Preferred Line Pipe
NATIONAL TUBE COMPANY, Pittsburgh, Pa.
Subsidiary of United States Steel Corporation
NATIONAL PIPE

Year's Record of Greatest Oil Field

East Texas in 1931 Completed 3,608 Oil Wells and Produced 107,000,000 Bbs. of Crude Oil. Intensive Development

By L. E. Bredberg

The East Texas producing area, comprising approximately 100,000 acres, 35½ miles long from north to south, 9 miles from east to west at the north end, tapering down to 3½ miles in the center in the Kilgore area, and again widening out in the Joiner area of Rusk County to around 5½ miles, was rightfully called the largest field in the world when it was proven up by interlinking producing wells from the Joiner discovery 7 miles northwest of Henderson, through the Bateman or Kilgore area; proven by the Bateman discovery December 28, 1930, and by Farrell and others' No. 1 Lathrop, another 12 miles farther north in Gregg County January 26, 1931. The field was a year old October 5, 1931.

C. M. (Dad) Joiner had much difficulty in raising funds to drill and complete the discovery oil well, a small producer, which proved to be located on the eastern edge of the great producing area, and many independent operators and companies did not take the discovery seriously until the Deep Rock Oil Co. and associates brought in a western extension test for an initial production of better than 10,000 bbls. per day, about a month after the Joiner well was completed. This well was really the one which started the ball rolling in regard to activities in the district, royalty and lease buying concentrating at that time in the immediate area of the two wells, but gradually spreading out in all directions until two other tests were drilled northeast and east of the Joiner well, and proving failures checked buying and drilling in those two directions.

Spreads and small blocks were taken to the north of the Joiner well between it and the Bateman discovery which was then drilling, but great impetus was given to the buying in this area when the test drilled 3½ miles southwest of Kilgore came in making an initial production of 15,000 bbls. at a total depth of 3,650 feet. This well was located approximately 10 miles northwest of the Joiner discovery.

Gregg County's First Well

Gregg County got its first production January 26 when Farrell and associates drilled in their No. 1 Lathrop, approximately 12 miles north of the Bateman discovery in northern Rusk County. This well increased the buying in all of Gregg County, especially between the two discovery wells. The last named discovery came in rated good for better than 18,000 bbls. per day and was immediately shut in.

The Bateman discovery extended a fast "play" for acreage and royalty in that area and brought the companies to the realization that the East Texas Field was to be a major field, and all of them should be protected with plenty of acreage. Several of the big companies continued to hold off for months, and until leases had increased to $1,000 and $2,000 per acre, then purchased as much as they could obtain from the independents who had taken advantage of the golden opportunity and who were the first to realize the possibilities of the area.

There were over 1,100 wells drilled in the district during the first half of 1931, and before proration, levied by the Railroad Commission, meant anything more than a gesture. But the latter part of the year more than doubled the first six months' activities, there being around 2,458 wells drilled in the latter part, making a total of 3,661 wells drilled during the 12 months, the greatest number ever drilled in any one field in a like period. On November 6, 1931, there were over 1,000 drilling operations in the field, the largest number ever recorded for any field at one time. The highest number of producing wells completed in the field during one week was 172 wells, brought in during the week ending October 28. There were 195 locations staked and wells started during the week ending October 15, 1931, the greatest number of locations ever staked and wells started in seven days in any one field. The field has been a record breaker in every way, except for the size of the wells, many fields having much larger wells, both in oil and gas volume. But where the wells lack such volumes of oil and gas, the field makes up in number of wells completed each week.

The field reached a maximum daily production of over 1,000,000 bbls. on August 15 and 16, the last two days before Governor Sterling of Texas ordered National Guard troops into the field to shut in the wells on August 17. There were approximately 107,000,000 bbls. of oil produced in the district during 1931, another record set up by the field, probably never to be duplicated because of cooperation between operators now to curtail production to meet demand, coupled with the necessity of holding back production in all fields, especially newly discovered fields. The highest daily average for any single week during the year was 848,398 bbls. during the seven-day period ending August 19, 1931.

Many Fires and Fatalities

The field also registered a great number of oil well fires and other serious accidents during the year, a dozen oil wells igniting from one cause or another, two of them snuffing out a dozen lives. One of the wells burned for 26 days before it was brought under control. Many derricks were pulled in during the year. These derricks, constructed of green lumber cut from native timber, in the drying pulling nails and bolts and giving way under stress of pulling casing, or doing other heavy work on the wells.

Improper completion of many of the wells caused the majority of the fires and caused the Railroad Commission and military authorities to issue rules and regulations in regard to completing wells, introducing more safety features, and eliminating many of the risks which the operators were taking in order to save money. These precautions no doubt prevented other costly fires.

Danger in Old Material

There is no method of checking up the amount of second hand material and equipment moved into the district from other fields in Texas and from other states during the year, but millions of tons of such equipment was brought in and used in place of the new and safer equipment for developing leases. Accidents and fires have been attributed in part to second hand equipment on some of the wells, and it was a blessing to oil field workers when operators and companies had to start purchasing new equipment. Much of the second hand equipment moved to the field was in good condition, but too much of it was on the ragged edge of disintegration, some of it in such condition that it could not be used, although hauled several hundred miles to East Texas and costing considerable in trucking fees.

There were more refineries, short pipe

EAST CENTRAL AND EAST TEXAS

East Central Texas

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
BOGGY CREEK:													
Daily average	2,890	2,646	2,402	2,219	1,954	1,844	2,541	2,542	1,131	1,020	2,540	1,062	
Month	89,586	74,088	74,493	66,574	60,578	55,331	78,775	78,804	33,929	31,603	76,206	32,918	752,879
CEDAR CREEK:													
Daily average	45	35	44	27	31	30	29	31	.....	.....	.....	.....	
Month	1,405	980	1,362	806	964	895	896	966	.....	.....	.....	.....	8,274
CURRIE:													
Daily average	304	276	276	272	286	277	248	262	234	201	.....	200	
Month	9,430	7,728	8,502	8,160	8,867	8,334	7,682	8,122	7,016	6,238	.....	6,212	86,351
HILL COUNTY:													
Daily average	30	30	28	28	27	16	59	22	.....	.....	.....	.....	
Month	920	840	870	841	832	485	1,827	681	.....	.....	.....	.....	7,296
MEXIA:													
Daily average	3,822	3,122	3,434	3,541	3,298	3,426	3,022	3,027	3,156	3,167	3,004	2,929	
Month	118,476	87,416	106,449	106,235	102,236	102,795	93,687	93,833	94,702	98,161	90,119	92,661	1,186,770
NIGGER CREEK:													
Daily average	178	156	163	155	146	151	185	155	.....	.....	.....	.....	
Month	5,535	4,368	5,059	4,642	4,521	4,526	5,734	4,804	.....	.....	.....	.....	39,189
POWELL:													
Daily average	5,077	4,841	4,561	4,168	3,586	4,064	4,006	3,720	1,953	2,115	3,910	2,461	
Month	157,401	135,548	141,399	125,049	123,383	121,922	124,189	115,636	58,584	65,574	117,298	76,295	1,362,278
RICHLAND:													
Daily average	111	121	117	104	70	93	102	102	49	36	100	24	
Month	3,450	3,388	3,623	3,108	2,179	2,777	3,161	3,163	1,469	1,124	3,004	750	31,196
VAN:													
Daily average	27,259	30,642	35,375	39,314	44,224	49,288	43,705	44,187	51,118	49,396	48,997	46,981	
Month	845,015	857,976	1,096,633	1,179,415	1,370,958	1,476,234	1,354,852	1,369,799	1,533,538	1,531,286	1,469,907	1,456,410	15,542,023
WORTHAM:													
Daily average	599	482	539	504	482	480	536	538	36	29	467	197	
Month	18,570	13,524	16,704	15,120	14,936	14,387	16,618	16,680	1,085	901	14,010	6,112	148,646
Daily average	40,315	42,352	46,940	50,332	54,498	59,589	54,433	54,596	57,677	55,964	59,018	53,914	52,507
Total 1931	1,249,782	1,185,856	1,455,154	1,509,950	1,689,453	1,787,686	1,687,421	1,692,488	1,730,322	1,734,887	1,770,544	1,671,358	19,164,902

East Texas

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
LONGVIEW:													
Daily average	.....	39,841	12,323	44,514	64,138	72,038	102,900	129,412	92,086	116,030	123,727	96,962	
Month	.....	111,540	382,093	1,335,424	1,988,293	2,161,148	3,189,908	4,011,776	2,762,588	3,596,930	3,711,815	3,005,862	26,257,287
KILGORE:													
Daily average	.....	3,754	39,440	138,891	130,139	168,909	193,556	220,057	125,433	157,339	140,659	105,096	
Month	.....	105,102	1,222,638	4,166,728	4,035,868	5,067,260	6,000,232	6,821,764	3,762,982	4,877,509	4,219,767	3,257,965	43,537,815
JOINER:													
Daily average	3,565	17,325	41,816	65,920	117,244	115,071	160,253	192,912	154,351	136,017	126,151	109,578	
Month	110,515	485,097	1,296,284	1,977,604	3,634,549	3,452,131	4,967,841	5,980,275	4,630,535	4,216,539	3,784,531	3,396,909	37,932,810
Daily average	3,565	25,063	93,579	249,325	311,571	356,018	456,709	542,381	371,870	409,386	390,537	311,637	295,145
Total 1931	110,515	701,739	2,900,925	7,479,756	9,658,710	10,680,539	14,157,981	16,813,815	11,156,105	12,690,978	11,716,113	9,660,736	107,727,912

TOTAL EAST CENTRAL AND EAST TEXAS

Daily average	43,880	67,415	140,519	299,657	366,069	415,607	511,142	596,977	429,547	465,350	449,555	265,551	347,652
Total 1931	1,360,297	1,887,595	4,356,079	8,989,706	11,348,163	12,468,225	15,845,402	18,506,303	12,886,428	14,426,865	13,486,657	11,332,094	126,892,814
Total 1930	669,523	678,455	813,799	1,030,567	1,194,501	1,229,886	1,259,256	1,246,657	1,228,947	1,320,710	1,257,992	1,266,110	13,196,403
Total 1929	675,021	579,471	566,569	605,389	608,505	577,820	600,851	582,362	549,000	580,595	546,912	651,062	7,213,557
Total 1928	797,384	727,284	780,967	727,455	736,122	706,269	713,628	723,016	711,450	709,120	657,810	705,002	8,695,507
Total 1927	1,479,568	998,208	1,442,554	1,254,690	1,066,028	1,032,720	1,002,230	960,655	873,720	929,845	856,470	865,334	13,162,026
Total 1926	1,928,851	1,759,548	1,822,614	1,763,970	1,703,853	1,557,780	1,662,437	2,198,365	1,865,970	1,731,598	1,558,890	1,734,047	21,287,923

lines to loading racks and main trunk lines constructed in the district during the year than has ever before been constructed in any other district in the same length of time. Over 7,000,000 bbls. of steel storage was erected in the district, approximately 5,000,000 bbls. of it having been cut down in other districts and moved to East Texas and reconstructed.

The Texas Company, Humble Oil & Refining Co., Magnolia Petroleum Co., Shell Petroleum Corp. and Houston Oil Co. were the largest builders of steel storage. There was a total of 53 loading racks built, 51 of them being built in 1931, but practically every one of them now standing idle, and have been standing idle since trunk lines were built out of the district, and the production curtailed to 400,000 bbls. per day for the entire field. Only two of the racks were in use during the last week of December.

When the loading racks went out of use many of the short lines connecting them were made into gathering lines and are now in use in such capacity to feed trunk pipe lines. There were approximately 160 miles of such lines built by independent operators and small pipe line companies and refining companies during the year to connect the field with loading racks and refineries. Major purchasing and pipe line companies constructed in the neighborhood of 1,520 miles of trunk lines during 1931, these lines having about 759,500 bbls. daily capacity, the majority of them connecting with water terminals on the Gulf Coast. The pipe line program in the district was the heaviest ever known in any field during any one year. Before the field was curtailed one purchasing and pipe line company handled and ran as high as 110,000 bbls. in one day.

The Humble Pipe Line Co. and Magnolia Pipe Line Co. constructed the greatest number of outlets to the district, but not as large lines as several of the other companies, and not direct lines to the coast, but shorter lines connecting to main lines running through the district. Four lines, constructed by the Shell Pipe Line Co., Atlantic Pipe Line Co., Sun-Yount Lee Pipe Line Co. and Texas Empire Pipe Line Co., were constructed direct to Gulf Coast terminals. There were 18 major pipe line outlets from the field, but several of these were short lines connecting with long established main lines near the field.

There were 18 refineries constructed in the district, having a total daily capacity og 80,300 bbls. None of the refineries operated at capacity and five of them were shut down in December, the refinery situation not being in a healthy state in the district. The Sinclair Refining Co. was the largest company constructing a plant in the district, all others having been built by small companies.

Gasoline Plants

Only two gasoline plants were constructed in the field, one at Kilgore and one at London, both by the Humble Oil & Refining Co. Neither of the plants operated at capacity. The Gulf Production Co. is preparing to erect a plant near the town of Overton in Rusk County, and the Arkansas Fuel Oil Co. is building one in the Lathrop area, Gregg County. The Lisbon Gasoline Co. is also constructing one in the Joiner area, Rusk County. Total capacity of these five plants will be in the neighborhood of 35,000,000 feet of gas per day. Curtailing the production from the wells has held back the construction of gasoline plants and there is but little chance that proposed plants will be constructed in the district in 1932. Production of oil in the wells will no doubt be cut back to below 100 bbls. per day as many more wells are completed, and in order to get enough gas to merit the construction of a gasoline plant many miles of gas-gathering line would have to be laid to many wells in the area, an unwarrantable investment and restraining companies from building plants. The Humble Oil & Refining Co. is processing 3 gallons of natural gasoline per 1,000 feet of gas from the wells and is adding this gasoline to the oil in the trunk lines, thereby raising the gravity of the oil and keeping down paraffin.

The "heart" of the East Texas Field is placed at 50,000 acres, with approximately 50,000 acres of other proven acreage outside of this richer area, making a proven area of around 100,000 acres, the district having been defined on all sides except the south end, which is semidefined, two tests on that end of the field being in doubt as the year closed. Some Geologists and experienced production men have placed the total ultimate recovery of the field at around 1,100,000,000 bbls., while others estimate it as high as 2,000,000,000 bbls. After 2,000 more wells are drilled, which is estimated as the number which will be drilled in the district in 1932, a more definite conclusion may be reached in regard to ultimate production. It seems that anyone's guess is about as good as another's at the present time, although the average sand thickness of the heart of the field has been figured at 40 feet, and the average estimate is that the wells will produce 800 bbls. per acre feet of sand. Porosity of the sand is, on an average, given as 25 per cent and that 90 per cent of the sand cored in the field is actually saturated.

Pressures in the field have not been dissipated beyond a normal decline since the field opened September 5, 1931, under the first curtailment order which gave a daily allowable of 225 bbls. per well. The wells have been curtailed since to 185 bbls., 165 bbls., 125 bbls. and the present per well allowable of 100 bbls., these cut in per well production being made to keep daily production of the district down to around 400,000 bbls. per day. Before troops were sent into the field on August 17 to shut in the wells, the field was producing almost to capacity, most of the wells flowing wide open, consequently the pressure declined at a rapid rate, many of the wells on the east side of the field falling off production, failing to flow, and only flowing when agitated by pump or swab. Many of the wells had to be placed on the pump in order to produce them. Some of the wells on the west side of the field, especially those drilled too near the water level, or below it, began to make water because of the heavy draught on the field by the wide-open flow policy then being carried on. Pressures increased in the field during the three weeks shut down in August.

The majority of the present pumping wells, dead, or wells needing agitation to dropped, and second hand equipment used in many of the wells helped in lowering costs. First costs for drilling the 3,650-foot wells in the field were placed at between $27,500 to $30,000, but this was gradually cut down by competitive drilling contractors until some were contracting to drill the holes for around $12,000. Many different kinds of deals were made by small operators to get their leases drilled, and some of the major companies also entered deals whereby they paid for drilling with oil, the contracting company dealing with a supply company to furnish it supplies, the latter company taking over the oil payment from the contractor for pay for the supplies used in drilling the wells. Competition reached the "cut-throat" stage until there was hardly anything to be made in drilling wells, although some of the contractors merely took such contracts in order to keep their men busy and pay expenses.

When operators and companies were sinking their wells as rapidly as possible up to August 17, there were many records set in drilling, some wells having

Slack Year in Central West Fields

Deep Drilling for Gas in Central Ohio Fields Met With Success. No New Pools Worthy of Note Are Discovered

By George A. Whitney

The old Central West fields had a dull year in 1931, but better results were noted in drilling for gas in the Central Ohio Field than in any one of several other years in the recent past. Development of the deep gas sands in Stark County, where it is necessary to go 4,400 to 5,400 feet in depth to strike the big gas was the most important feature of the year's work in Central Ohio. Indiana's most active spot was in Pike County where 27 completions were recorded. Illinois was very quiet with only 39 completed wells accounted for. Following is the tabulated record of field operations in the Lima, Central Ohio, Indiana and Illinois fields during the past year:

CENTRAL WEST SUMMARY
Result of Field Operations in 1931 in Four Divisions

Field—	Comp.	Prod.	Dry	Gas	Old wells abd
Lima	148	940	24	90	728
Central Ohio	574	2,999	161	295	0
Indiana	162	1,492	80	47	83
Illinois	39	107	25	1	210
Total 1931	923	5,538	290	433	1,021
Total 1930	1,753	22,091	544	570	587
Difference	830	16,553	254	137	434

LIMA FIELD
Summary of Wells Completed in 1931

Month—	Comp.	Prod.	Dry	Gas	Abd.
January	17	21	2	10	26
February	13	5	4	8	62
March	11	135	2	8	104
April	9	160	1	6	71
May	10	107	2	5	33
June	10	25	4	4	62
July	7	1	1	5	37
August	13	10	0	12	23
September	10	15	1	8	33
October	24	86	4	13	59
November	13	33	2	8	102
December	11	342	1	3	116
Total 1931	148	940	24	90	728
Total 1930	205	1,663	39	72	314
Difference	57	723	15	18	414

Summary by Counties

County—	Comp.	Prod.	Dry	Gas	Abd.
Wood	2	10	0	1	278
Hancock	5	113	0	0	157
Allen	1	15	0	0	24
Auglaize	2	2	1	0	3
Sandusky	2	0	1	1	190
Mercer	3	1	0	2	16
Lucas	8	72	3	1	35
Ottawa	4	15	0	1	5
Seneca	40	45	4	34	18
Wyandot	26	265	9	15	1
Hardin	27	386	5	11	0
Shelby	3	15	0	1	0
Fulton	1	0	0	1	0
Huron	2	0	0	2	0
Henry	10	0	0	10	0
Darke	3	1	0	2	1
Crawford	1	0	1	0	0
Paulding	4	0	0	4	0
Logan	3	0	0	3	0
Erie	1	0	0	1	0
Total 1931	148	940	24	90	728

CENTRAL OHIO
Summary of Wells Completed in 1931

Month—	Comp.	Prod.	Dry	Gas	Oil
January	54	220	17	33	14
February	83	601	25	39	19
March	30	290	7	16	7
April	31	26	11	15	5
May	49	359	10	31	8
June	39	202	15	18	6
July	53	135	15	29	8
August	28	112	6	16	6
September	48	231	17	24	7
October	58	206	13	32	13
November	55	305	13	29	13
December	47	312	12	23	12
Total 1931	574	2,999	161	295	118
Total 1930	1,129	14,888	342	440	
Difference	555	11,889	182	145	

Summary by Counties

County—	Comp.	Prod.	Dry	Gas	Oil
Ashland	45	67	18	16	11
Medina	103	1,511	30	10	63
Lorain	35	0	9	26	0
Wayne	19	59	8	9	2
Holmes	6	25	2	3	1
Cuyahoga	2	0	1	1	0
Richland	7	0	3	4	0
Knox	18	3	8	9	1
Coshocton	19	163	6	6	7
Summitt	19	0	4	15	0
Licking	21	47	7	12	2
Muskingum	45	642	15	20	10
Athens	46	316	13	25	8
Tuscarawas	12	10	4	8	1
Stark	87	6	8	78	1
Fairfield	20	10	3	16	1
Guernsey	19	131	4	8	7
Belmont	36	9	9	24	3
Scioto	1	0	1	0	0
Lake	1	0	1	0	0
Geauga	2	0	2	0	0
Ashtabula	5	0	2	3	0
Pickaway	2	0	1	1	0
Carroll	2	0	2	0	0
Morrow	1	0	0	1	0
Total	574	2,999	161	295	118

INDIANA FIELD
Summary of Wells Completed in 1931

Month—	Comp.	Prod.	Dry	Gas	Old wells abd
January	18	147	11	4	0
February	16	168	4	6	12
March	13	58	5	4	3
April	11	75	6	1	0
May	18	625	10	4	28
June	13	2	7	5	1
July	15	52	5	6	17
August	11	5	7	3	5
September	6	0	3	3	0
October	8	0	6	2	9
November	19	80	11	4	1
December	14	280	5	5	7
Total 1931	162	1,492	80	47	83
Total 1930	215	2,498	79	55	145
Difference	53	1,006	1	8	62

Summary by Counties

County—	Comp.	Prod.	Dry	Gas	Old wells abd
Jay	4	43	1	1	13
Blackford	1	3	0	0	0
Huntington	2	105	0	0	7
Gibson	7	207	3	1	6
Pike	27	75	18	7	7
Daviess	11	0	7	4	0
Vigo	6	140	3	0	0
Warrick	5	0	5	0	0
Sullivan	19	2	10	8	0
Spencer	9	190	3	0	1
Perry	22	690	12	0	5
White	1	0	1	0	0
Monroe	7	0	2	5	0
Delaware	0	0	0	0	17
Knox	14	0	7	7	0
Crawford	1	0	0	1	0
Posey	1	0	1	0	0
Madison	2	0	0	2	0
Allen	1	0	0	1	0
Dubois	0	0	0	0	2
Rush	1	0	0	1	0
Hancock	1	0	0	1	0
Henry	1	0	0	1	0
Greene	3	0	0	3	0
Porter	2	0	1	1	0
Lake	1	0	1	0	0
Harrison	1	0	0	1	0
Dearborn	2	0	1	1	0
Vandeburg	10	37	4	1	0
Randolph	0	0	0	0	2
Adams	0	0	0	0	17
Total	162	1,492	80	47	83

ILLINOIS FIELD
Summary of Wells Completed in 1931

Month—	Comp.	Prod.	Dry	Gas	Old wells abd
January	6	25	3	0	6
February	8	7	5	1	22
March	5	28	3	0	10
April	0	0	0	0	16
May	3	0	3	0	12
June	4	9	2	0	12
July	4	0	4	0	11
August	2	20	1	0	19
September	2	0	2	0	42
October	2	2	1	0	5
November	3	16	1	0	39
December	0	0	0	0	16
Total 1931	39	107	25	1	210
Total 1930	204	3,042	84	3	188
Difference	165	2,935	59	2	22

Summary by Counties

County—	Comp.	Prod.	Dry	Gas	Abd
Cumberland	1	0	1	0	0
Crawford	13	71	6	1	25
Lawrence	0	0	0	0	69
Wabash	3	8	1	0	1
St. Clair	10	11	7	0	115
Effingham	1	0	1	0	0
Monroe	4	0	4	0	0
Clinton	2	0	2	0	0
Madison	1	2	0	0	0
Marion	2	15	1	0	0
Perry	1	0	1	0	0
Macoupin	1	0	1	0	0
Total	39	107	25	1	210

MISSOURI
Summary of Wells Completed in 1931

Month—	Comp.	Prod.	Dry	Gas	Abd
January	1	0	1	0	4
March	1	0	1	0	0
April	1	0	1	0	0
May	0	0	0	0	2
December	1	0	1	0	0
Total 1931	4	0	4	0	6
Total 1930	8	0	8	0	0
Difference	4	0	4	0	6

Summary by Counties

County—	Comp.	Prod.	Dry	Gas	Abd
St. Louis	4	0	4	0	6

been drilled within five days' time, one company drilling 965 feet in 12 hours. But this speedy drilling only added to the number of accidents in the field, which number increased alarmingly during the drilling race to bring in wells quickly.

An A.P.I. chapter was formed at Longview July 18 in order to set better drilling and producing standards in the district and help curtail fires and accidents, the chapter becoming very active since its organization. R. W. Taylor of the Simms Oil Co., Willow Springs, was elected as chairman.

Only One Unitized Block

Only one unitized block of acreage was formed in the district in 1931. This was by the Stanolind Oil & Gas Co., Simms Oil Co. and Continental Oil Co. on 400 acres in the Marshall Mann Survey, which acreage lies on the Gregg-Upshur County line. Many operators and companies holding acreage, which is often cut up into tracts as small as 2, 3, 5 and 10 acres, has prevented the unitization of other blocks and it is hardly probable that many blocks will be unitized in 1932.

Extension Wells

Farrell and associates' No. 1 Lathrop in the Castleberry Survey opened up the first production in Gregg County January 26, 1931. Mudge Oil Co.'s No. 1 Richardson in the D. Ferguson Survey extended the Lathrop Field a few months later and brought the first production to Upshur County. Selby Oil & Gas Co. drilled the first producer in the Gladewater area, western Gregg County, extending the Gregg County producing area approximately 8 miles to the west. The late Guy V. Lewis extended production west of the Joiner area and brought in the first producer for Smith County. This was on the Cook farm in the Jordan Survey. All of these were completed in the early part of 1931. Production has not been extended to Cherokee County, southwest of the Joiner Pool, but there are producers within a half mile of that line, and 1932 is expected to see the extreme northeastern corner of Cherokee County put into the production class.

Meetings in Field

A group of operators in the district first met at Tyler on August 6 to discuss a general shutdown of all drilling and producing wells. This meeting was presided over by Capt. J. F. Lucey of Dallas. A second meeting was called in the same city for August 14, at which time several hundred operators convened and voiced their opinion in favor of a general shutdown. A group of men appointed at this meeting waited upon Governor Sterling and on August 17 the governor issued an order to all producers to shut in their wells in the district, and at the same time ordered National Guard troops to see that such orders were carried out. This was the second time in the history of the oil industry that soldiers were called into action to shut in producing wells or take any action in controlling the industry, Governor Murray of Oklahoma having called out troops in the Oklahoma City Field for the same purpose a short time previous to the Texas order.

An injunction was later granted by a federal judge to two producers in the field to restrain the soldiers and the State Railroad Commission from interfering with wells belonging to those two producers, but so far this injunction has not prevented the curtailment of the wells of those men along with all other wells in the field.

A number of midget wells were put down in East Texas during the year. Three of these wells are on production and making their daily allowance of 100 bbls. the same as wells drilled with standard equipment. Three-inch pipe was cemented in these wells, and tapered 1¼-1¾-inch tubing was run in the hole. All of these small wells are in the Kilgore townsite. They were drilled at a cost around $6,000, with casing and tubing run and flow tanks erected, a comparatively low cost for obtaining production. The Solar Drilling Co. of Ardmore, Okla., is manufacturer of the drilling equipment and is drilling the wells in the field.

Paraffin has not given much trouble in East Texas so far, a mild winter no doubt having considerable to do with this situation, although curtailing the wells to 100 bbls. per day should aggravate it. However, the majority of the companies withdraw this amount from their wells within an hour or two, thereby keeping down paraffin troubles, the heavier flow in a short time proving better than flowing the wells over a greater length of time, but at longer intervals, for their allowables. Pipe lines have not reported any paraffin trouble.

During the first three months of 1931 major companies continued to purchase acreage from independent operators who were the first to enter the district and snap up the cheap acreage, before the major companies realized the importance of the field, and gave it credit for great possibilities. Thousands of acres, mostly in small tracts, were turned to the major companies during that time, and the following months saw but little acreage changing hands, except where the independents deemed it advisable to sell their leases instead of trying to produce them, which proved good business in the majority of instances.

Farrell and associates sold out their 2,500-acre block in the Lathrop area, and the half interest in their discovery well, at an early date, to the Yount-Lee Incorporation of Beaumont, Tex., this deal the largest in the district, with $3,500,000 in cash and oil payments changing hands. Bateman's sale of 1,200 acres in his discovery and block in the Kilgore area, northern Rusk County, was make them flow, and the salt water wells were placed in those conditions during May, June, July and up to August 17, when the field was finally shut in, and since production was curtailed to the above named limits few wells have gone dead or have shown salt water, except extreme edge wells or wells in the areas which are expected to show up unfavorably. If the field had been allowed to produce at the rate of August 15 and 16, when it made over 1,000,000 bbls. per day, there no doubt would be several hundred acres ruined by salt water encroachment, many more wells would have gone on the pump and a great many would be standing dead, not flowing. Due to the adoption of conservation principles and regulations there are only about 20 wells "dead," or needing pumping equipment or agitation to make them produce; 30 wells which flow when agitated by the swab or pump, and around 90 which are on the pump. Approximately 30 other wells have produced some salt water with the oil, all of these being western edge wells. Seventeen of these salt water wells were making water before April 16, 1931. Restrictions levied to prevent drilling too deep, thereby penetrating the salt water strata, and curtailment of production have acted to prevent many more wells showing salt water.

The October 22, 1931, issue of The Oil and Gas Journal gave a comparative late record of the number of pumping wells, dead wells, and those which flow when agitated, in East Texas. Only a few have been added to this list since that time.

Caring for Salt Water

When the field was flowing "wild," and wells began showing salt water, companies became alarmed at the possible situation which would undoubtedly be developed, and a committee was appointed by several major producing companies to study the salt water situation and formulate plans to take care of the millions of barrels of salt water which no doubt would have accumulated in a short while if the field had not been curtailed sharply. The committee went into many details in the field, studying sand conditions, depths of wells, proving the water level, plugging back wells to shut off the water, and figuring on costs of laying lines to carry off the water, building lakes or vats or steel storage to handle such water accumulations, and studying other plans of solving the problem. It was proved that it would cost several millions of dollars whichever method was adopted to handle the water, but luckily the field was brought under control and the great problem practically vanished for the time being, although it will appear as the field is further developed and the oil gradually withdrawn from the district.

Proration Plans

There were several proration plans advocated for East Texas in the fore part of the year, different factions backing various plans, but none of these, nor the order of the Railroad Commission, were effective in curtailing production until Governor Sterling declared martial law for the area and sent in over 1,300 National Guardsmen to shut in the wells. A few weeks after it was proved that the Guard was well established, and was able to keep the wells shut in, all but about 130 men and officers were discharged, this number being in the field at the present time and carrying on the proration work, the Railroad Commission having withdrawn from the work in the district.

Oil at 6 Cents per Barrel

In June, 1931, price of the 40 gravity oil in the district fell to as low as 6 cents, the average price at that time being 15 cents per barrel, a new low record for crude oil in many years, pipe lines and tank cars running almost at capacity in carrying out the cheap priced crude until the shutdown came in the middle of August. Tank car shipments reached almost 200,000 bbls. per day during the height of the production and shipping orgy, oil going to refineries in many parts of Texas, in adjoining and other states in the Union, and as far distant as Canada. Such shipments would have increased, especially to Oklahoma when that State's larger fields were shut in by martial law, but a short time after Governor Murray declared martial law in those fields, Governor Sterling's edict put a stop to the possibilities of getting cheap crude from East Texas for the Oklahoma refineries which were in need of crude oil.

Troops Welcomed

Practically all operators were in favor of troops shutting in the East Texas district, and as soon as the soldiers entered the district, started to unload trucks and buses and to pitch camps, a general feeling of optimism overspread the district, giving rise to the opinion that the price of crude would soon be advanced, which really happened. On August 15, two days before troops entered the field, a posting of 25 cents per barrel was made on the crude. On August 22 the postings were raised to 68 cents, an increase of 46 cents per barrel, positive proof that the martial law shutdown had become effective and had been desired and needed in the district. On November 2, another posting was made, increasing the price of crude to 83 cents, at which level it remained for the balance of the year.

Only One Well Shot

Only one well in the district was given a shot of nitroglycerin to make it produce. This was the Martin Oil Co.'s No. 1 Elder in the Mary Van Winkler Survey on the eastern edges of the Kilgore area. Twenty quarts were used at 3,536-41 feet, 30 quarts at 3,558-63 feet and 30 quarts at 3,606-14 feet, in an effort to loosen up the sand and make the well flow. Such a method could not be resorted to on the west side of the field due to the fact that salt water is near the oil stratum and would undoubtedly appear. Salt water does not underlie the east edge of the field and shooting into the underlying strata there, the Georgetown lime, would not endanger the well. Probably no other well will ever be shot in the district, for those located on the east side

(Continued on Page 113)

HART COUNTY LED IN NEW WORK IN KENTUCKY FIELDS IN 1931

By George A. Whitney

Hart County was the big feature of the Kentucky fields in 1931, with a total of 124 completions, of which 57 were oil producers with an initial production of 7,615 bbls. There were 46 dry holes and 21 gas wells.

The shut down was a hard knock on the producing fields of Kentucky, especially in the Owensboro or Tri-County Field. Regardless of this, crude oil in the western Kentucky oil field remained a good source of income during 1931, according to figures released by the state tax commission. Seven counties, Daviess, Hancock, Ohio, Hart, McLean, Henderson and Muhlenberg, included in the western Kentucky group produced a total of 2,701,319.99 bbls. during the first 11 months of the year. This brought $2,527,839.98 to operators and farmers, and others interested. Although the revenue received from the field in 1931 is much below that of 1930, nevertheless it is considered good especially when the fact is taken into consideration that the field was practically shut down the first two months of the year. In 1930 a total of $5,796,000 was received for 3,893,732 bbls.; from Ohio, Daviess, Hancock, Henderson, McLean and Muhlenberg Counties.

The production of the counties in western Kentucky and amounts paid for the oil from January 1 to November 30, 1931, are as follows:

County—	Prod. bbls.	Value
Daviess	543,285.95	$444,463.48
Hancock	59,654.32	47,779.94
Hart	907,014.69	1,071,395.24
Henderson	50,196.30	35,947.46
McLean	117,325.72	93,494.33
Muhlenberg	23,325.42	15,055.16
Ohio	1,000,517.59	819,704.37
Total	2,701,319.99	$2,327,839.98

KENTUCKY FIELDS

Summary of Wells Completed in 1931

Month—	Comp.	Prod.	Dry	Gas	Oil
January	50	1,070	20	12	18
February	51	1,958	17	16	18
March	50	637	17	17	16
April	66	3,546	24	11	31
May	18	660	8	5	5
June	23	180	2	12	9
July	18	943	5	6	7
August	15	203	7	4	4
September	26	106	7	9	10
October	21	518	2	7	12
November	33	1,039	5	9	19
December	49	1,460	11	8	30
Total 1931	420	12,122	125	116	179
Total 1930	1,113	37,745	320	157	636
Difference	693	25,623	195	41	457

Completions by Counties

County—	Comp.	Prod.	Dry	Gas	Oil
Warren	3	0	2	1	0
Barren	26	125	6	17	3
Ohio	47	601	14	10	23
Daviess	43	1,016	22	1	26
Hancock	33	812	7	7	19
Henderson	14	195	3	3	8
McLean	28	1,227	6	1	21
Hart	124	7,615	46	21	57
Webster	17	155	2	10	5
Muhlenburg	16	95	6	5	5
Hopkins	5	0	0	5	0
Greene	10	50	2	6	2
Union	2	0	2	0	0
Christian	3	0	0	3	0
Metcalf	2	0	0	2	0
Meade	1	0	0	1	0
Cumberland	1	0	0	1	0
Caldwell	3	150	0	1	2
Perry	1	0	0	1	0
Butler	1	0	1	0	0
Carroll	4	0	0	4	0
Wayne	2	9	0	0	2
Estill	7	21	2	1	4
Wolfe	1	0	0	1	0
Lee-Owsley	3	8	0	0	3
Lawrence-Johnson	4	8	2	0	2
Johnson-Magoffin	1	5	0	0	1
Clay	3	0	0	3	0
Knox	3	25	0	2	1
Leslie	2	0	2	0	0
McCracken	1	0	0	1	0
Floyd	4	0	0	4	0
Bell	1	0	0	1	0
Shelby	1	0	0	1	0
Bath	1	0	0	1	0
Breckenridge	1	5	0	1	1
Grayson	1	0	0	1	0
Total	420	12,122	125	116	179

TENNESSEE FIELDS

Summary of Wells Completed in 1931

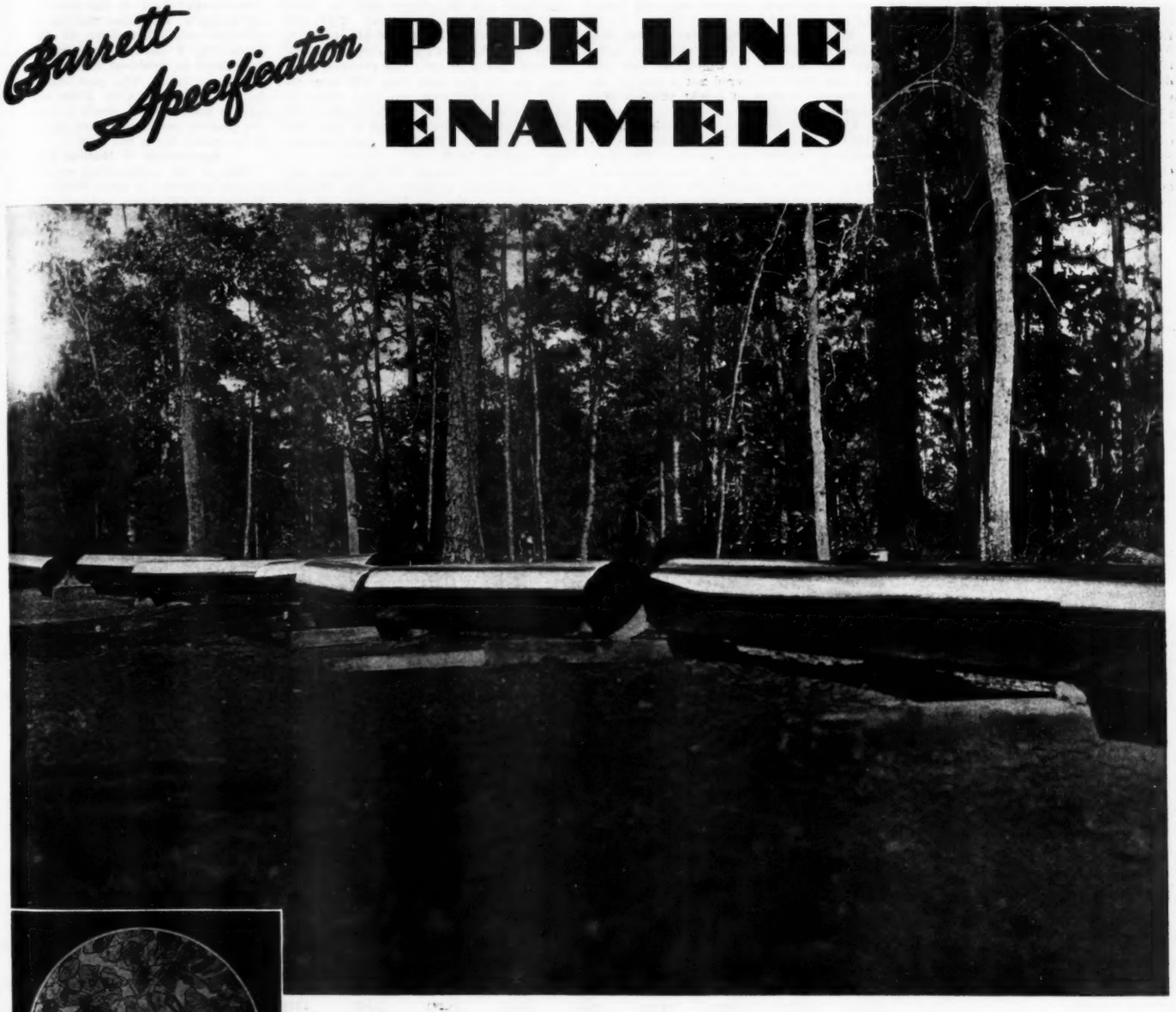
Month—	Comp.	Prod.	Dry	Gas
January	1	0	0	1
May	3	0	0	3
Total 1931	4	0	0	4

Completions by Counties

County—	Comp.	Prod.	Dry	Gas
Coffee	1	0	0	1
Morgan	3	0	0	3
Total	4	0	0	4

Flake-type mineral reinforcement gives tensile strength and toughness to

Barrett Specification PIPE LINE ENAMELS



This reproduction of a photomicrograph shows the interlocking of the flakes of the internal reinforcement used by Barrett. By laminating with the waterproofing agent they give Barrett Pipe Line Enamels unusual tensile strength and toughness.

For pipe of large diameter The Barrett Company will furnish equipment required to revolve pipe and spread enamel.

THE reinforcement used with Barrett Specification Pipe Line Enamels is a plate-like mineral. It not only adds tensile strength and toughness because these flakes interlock and laminate when mixed with coal tar pitch, but it is also non-porous, non-absorbent, chemically inert and extremely resistant to electrical currents. Moreover, its use allows for more pitch per finished ton of enamel. And since coal tar pitch is the finest waterproofing agent so far discovered, its greater percentage in Barrett Enamels means greater waterproofing efficiency. Write, phone or wire for complete information.

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Outside Factors Hold Back Oklahoma

Production Curtailed and Drilling Operations Held in Abeyance in 1931. Too Much Production Elsewhere

By W. A. Spinney

The breaking down of world industry and overproduction of oil combined to make 1931 the poorest year in the history of oil in Oklahoma for many years. The great East Texas Field and the Oklahoma City Field, both capable of producing enough oil to supply much of the country's crude oil requirements, were enough to depress the market, making old production unprofitable and new production at great depths equally nonpaying and discouraging drilling in the State. Only 1,058 wells were completed in Oklahoma in 1931. In 1920, 9,097 wells were completed. In 1930, 3,466 wells were brought in. The figures indicate the extent of the slump in last year's field work in the State which ranks as one of the three largest producing states in the union.

Wildcat completions in 28 counties were either dry or resulted in gas wells. In the counties in which oil had previously been discovered not a pool of importance or even of bright promise was uncovered in 1931.

Crude oil production in Oklahoma in 1931 aggregated 175,703,848 bbls., an average of 481,380 bbls. per day. The field was held down all the year and could have produced double the quantity the figures represent. Oklahoma City's total for the year was 44,822,508 bbls. In 1930 that field produced 34,603,067 bbls. The Seminole Field produced 40,485,350 bbls. last year and 66,217,239 bbls. in 1930. St. Louis-Pearson produced 7,277,798 bbls. last year and 11,566,947 bbls. in 1930. Oklahoma City's increase in production last year over the previous year was due to the fact that 220 new oil wells were completed last year, while in the Seminole and St. Louis Fields drilling fell off considerably and in the case of the Seminole Field its peak production came in 1926.

One of the features of the year was the unexpected richness of the Wilcox sand area in the northern part of the Oklahoma City Field, and the upward revision of the estimates on ultimate production of the great Wilcox formation in that part of the pool. It was necessary at all times through the year to hold production down in the Oklahoma City Field, and it looks as if the field must be produced under restrictions for a long time. The pipe line facilities in the Oklahoma City Field could not handle more than a small percentage of the possible production were all the wells to be opened for a full flow.

Application of Martial Law

One of the outstanding events in oil history occurred in 1931, when Governor Murray of Oklahoma ordered the militia of the State to shut in the Oklahoma City Field and the Greater Seminole

OKLAHOMA

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
WASHINGTON COUNTY:													
Daily average	2,231	4,819	5,114	5,209	5,006	4,916	4,808	4,793	4,028	4,034	4,027	3,914	
Month	69,161	134,932	158,534	156,270	155,186	147,480	149,048	148,738	120,840	125,054	120,810	121,334	1,607,387
NOWATA COUNTY:													
Daily average	2,617	5,104	4,829	4,759	4,710	4,683	5,745	5,733	5,010	5,029	5,031	4,910	
Month	81,127	142,912	149,699	142,770	146,010	140,490	178,095	177,723	150,300	155,899	150,930	152,210	1,768,165
ROGERS COUNTY:													
Daily average	1,914	1,503	1,515	1,510	1,533	1,543	2,005	2,002	1,423	1,435	1,445	1,402	
Month	59,334	42,084	46,965	45,300	47,523	46,290	62,155	62,062	42,690	44,485	43,350	43,462	585,706
OSAGE AND EASTERN KAY COUNTIES:													
Burbank—													
Daily average	11,848	12,940	12,687	12,670	12,955	13,010	13,467	12,221	12,352	12,107	12,097	11,815	
Month	367,288	362,320	393,297	380,100	401,605	390,300	417,477	378,851	370,560	375,317	362,910	366,265	4,566,290
Osage, outside Burbank—													
Daily average	18,953	18,795	18,095	18,342	19,386	18,653	20,361	17,213	17,451	19,347	18,821	18,177	
Month	587,543	526,260	560,945	550,260	600,966	559,590	631,191	533,603	523,530	599,757	564,630	563,487	6,801,762
TULSA AND WAGONER COUNTIES:													
Bird Creek, Owasso, etc.—													
Daily average	1,888	2,773	2,266	2,212	2,258	2,249	3,207	3,192	3,090	3,089	3,007	2,962	
Month	58,528	77,644	70,246	66,360	69,998	67,470	99,417	98,952	92,700	95,759	90,210	91,822	979,106
Red Fork, Sand Springs, Bruner—													
Daily average	978	966	948	941	1,533	945	1,654	1,349	1,513	1,107	1,151	1,147	
Month	30,318	27,048	29,388	28,230	47,523	28,350	51,274	41,819	45,390	34,317	34,530	35,557	433,744
Bixby, Leonard—													
Daily average	885	859	1,272	877	764	749	764	737	878	866	861	833	
Month	27,435	24,052	39,432	26,310	23,684	22,470	23,684	22,847	26,340	26,846	25,830	25,823	314,753
Broken Arrow, Coweta—													
Daily average	842	852	781	690	752	663	753	581	659	531	468	472	
Month	26,102	23,856	24,211	20,700	23,312	19,890	23,312	18,011	19,770	16,461	14,040	14,632	244,297
TULSA, OKMULGEE AND MUSKOGEE COUNTIES:													
Okmulgee and Beggs—													
Daily average	1,937	1,892	1,877	1,815	1,861	1,802	1,775	1,762	1,781	1,745	1,761	1,713	
Month	59,737	52,976	58,187	54,450	57,691	54,060	55,025	54,622	53,430	54,095	52,830	53,103	660,206
Mounds—													
Daily average	1,279	1,252	1,291	1,278	1,110	1,083	1,117	983	845	883	923	876	
Month	39,649	35,084	40,021	38,340	34,410	32,490	34,627	30,473	25,350	27,342	27,990	27,156	392,932
Bald Hill and Haskell—													
Daily average	2,153	1,936	1,840	1,802	1,620	1,710	1,549	1,501	1,679	1,594	1,584	1,507	
Month	66,743	54,208	57,040	54,060	50,220	51,300	48,019	46,531	50,370	49,414	47,520	46,717	622,142
Morris, Boynton, Cole—													
Daily average	1,429	1,424	1,412	1,411	1,293	1,303	1,238	1,296	1,354	1,342	1,380	1,316	
Month	44,299	39,872	43,772	42,330	40,083	39,090	38,378	40,176	40,620	41,602	41,400	40,796	492,419
OKMULGEE, OKFUSKEE, SEMINOLE, HUGHES AND POTTAWATOMIE COUNTIES:													
Seminole City—													
Daily average	13,336	13,344	13,657	13,646	13,831	13,715	12,797	8,184	5,780	8,555	14,468	12,492	
Month	413,416	373,632	423,367	409,380	428,761	411,450	396,707	253,704	173,400	265,205	434,040	387,252	4,370,314
East Seminole—													
Daily average	1,953	1,952	1,953	1,816	1,728	1,716	1,606	1,185	958	1,084	1,484	1,303	
Month	60,543	54,656	60,543	54,480	53,568	51,480	49,786	36,735	28,740	33,604	44,520	40,393	569,048
Bowlegs—													
Daily average	12,377	12,577	13,977	14,391	14,756	14,350	13,585	6,659	4,753	9,343	13,812	13,826	
Month	383,687	352,156	433,287	431,730	457,436	430,500	421,135	206,429	142,590	289,633	414,360	428,606	4,391,549
Little River—													
Daily average	22,053	22,580	24,762	23,948	25,405	24,103	21,495	14,067	9,355	14,109	21,802	20,477	
Month	683,643	632,240	767,623	718,440	787,555	723,090	666,345	436,077	280,650	437,379	654,060	634,787	7,421,889
East Little River—													
Daily average	10,237	9,606	8,815	6,608	5,572	5,225	4,795	3,739	2,813	3,535	3,578	2,253	
Month	317,347	268,968	273,265	198,240	172,732	156,750	148,645	115,909	84,360	109,585	107,340	69,843	2,022,984
East Earlsboro—													
Daily average	18,350	18,282	18,664	18,010	16,558	16,837	16,261	6,382	2,139	9,237	15,508	14,877	
Month	568,850	511,896	578,584	540,300	513,298	505,110	504,091	197,842	64,170	286,347	465,240	461,187	5,196,915
Earlsboro—													
Daily average	17,893	10,161	18,584	18,978	19,267	17,675	16,898	10,826	8,620	11,096	16,746	14,910	
Month	554,682	284,508	576,104	569,340	597,277	530,250	523,828	335,606	258,600	343,976	502,380	462,210	5,538,772
South Earlsboro—													
Daily average	10,102	7,641	6,542	6,489	5,847	5,413	4,400	2,575	1,427	2,490	6,088	5,692	
Month	313,162	213,948	202,802	194,670	181,257	162,390	136,400	79,825	42,810	77,190	182,640	176,452	1,963,544
Searight—													
Daily average	5,480	5,502	5,252	4,586	4,274	4,312	3,914	3,239	2,098	2,983	3,923	3,900	
Month	169,880	154,056	162,812	137,580	132,494	129,360	121,334	100,409	62,940	92,473	117,690	120,900	1,501,928
Mission—													
Daily average	6,631	6,405	7,429	8,405	8,865	8,209	7,444	3,509	1,899	4,877	8,712	8,711	
Month	205,561	179,340	230,299	252,150	274,815	246,270	230,764	108,779	56,970	151,187	261,360	270,041	2,467,536
Carr City—													
Daily average	12,750	13,744	12,559	12,680	13,189	12,666	12,424	4,519	1,118	7,240	18,510	19,776	
Month	395,250	356,832	389,329	380,400	408,859	379,980	385,144	140,089	33,540	224,440	555,300	613,056	4,262,219
Maud—													
Daily average	2,745	2,560	2,541	2,522	2,552	2,557	2,174	1,248	1,007	1,681	2,051	1,990	
Month	85,095	71,680	78,771	75,660	79,112	76,710	67,394	38,688	30,210	52,111	61,530	61,690	778,651
Total Seminole Field—													
Daily average	133,907	123,354	134,735	132,079	131,844	126,778	117,793	66,132	41,966	76,230	126,682	120,207	
Month	4,151,117	3,453,912	4,176,785	3,962,370	4,087,164	3,803,340	3,651,583	2,050,092	1,258,980	2,363,139	3,800,460	3,726,417	40,485,350
Allen—													
Daily average	12,984	12,669	12,738	11,754	11,879	11,614	10,857	6,817	5,320	8,109	11,322	10,311	
Month	402,504	354,732	394,878	352,620	368,249	348,420	336,567	211,327	159,600	251,379	339,660	319,641	3,839,577
Konawa—													
Daily average	16,362	15,467	13,299	10,199	9,628	8,506	6,477	2,996	1,553	4,355	7,552	6,582	
Month	507,222	433,076	412,269	305,970	298,468	255,180	200,787	92,876	46,590	135,005	226,560	204,042	3,118,045
Asher—													
Daily average	9,653	8,817	8,291	7,969	8,018	7,910	6,981	3,495	2,197	4,472	5,736	4,156	
Month	299,243	246,876	257,021	239,070	248,558	237,300	216,411	108,345	65,910	138,632	172,080	128,836	2,358,282

(Table continued on next page)

rea. The order was effective August 5, nd the flush and semiflush fields in the tate remained shut in until October 10. The causes leading up to the military rder were numerous and conflicting. The main cause was the low prices of rude oil, at that time caused by over roduction in East Texas.

The governor's proclamation of mar- ial law was released late in the after- oon of August 4, ordering all the 3,106 rorated wells in the State shut down. aking over control of the Oklahoma ity Field, where a total of 810 wells ad been completed, the order shut down 96 wells, excepting 12 wells which were lassified as gas wells and 32 wells which ere not producing. The other flush elds in the State included in Governor Murray's shutdown order were: Allen, Wanette-West Asher, Bowlegs, Carr City, West Chandler, old Earlsboro, South Earlsboro, East Earlsboro extension, Earlsboro Townsite, Konawa, Little River, East Little River, Maud, Mission Sasakwa, Searight, Seminole, East Seminole, West Seminole, St. Louis, Tatums and Wewoka Townsite Pools.

The companies submitted to the order without resistance and national guardsmen moved from one producing property to another as rapidly as possible shutting in the wells in the Oklahoma City Field. Wells in the Greater Seminole area were shut in August 5, and the Tatums Field in Carter County and the West Chandler Field in Lincoln County were shut in later in the week in the same manner. The fields remained under military control throughout the remainder of the year.

Deepest Well in U. S.

The deepest well in the United States was drilled in the Cement Field, Caddo County, the Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Corp.'s No. 6 Preston-Culp, NW cor. NE, Section 6-5-9w, which was drilled to a total depth of 10,079 feet, where a showing of gas was found. The formation at the bottom of the hole was in the Pennsylvanian. The drill stem was twisted off at the bottom of the hole and was recovered before the crew started plugging back. The 6-inch casing was landed at 9,777 feet. The 9-inch casing was landed at 5,525 feet. The hole was first plugged back to 8,770-8,870 feet, where the formation was shot with 120 quarts and only a showing of gas was found. It was again plugged back to 8,333-8,410 feet and shot with 110 quarts and another showing of gas was found. Both of these shots were placed in lime. It was plugged back to 7,300-30 feet and shot in sand, where a showing of oil and gas was found. Other showings of oil and gas were found at 6,667-6,779 feet and at 6,040-80 feet.

A new producing district was opened in Marshall County, near the Red River, McCrory & McCrory's No. 1 Adams, NE cor. SW SE, Section 31-7s-6e, swabbed 40 bbls. of oil from sand at 523-26 feet. The same company also completed another well about a mile to the north, proving considerable territory. This was

OKLAHOMA (Continued)

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
St. Louis-Pearson—													
Daily average	20,957	20,294	23,272	23,388	22,296	22,514	21,265	16,237	13,180	15,509	20,941	19,460	
Month	649,667	568,232	721,432	701,640	691,176	675,420	659,215	503,347	395,400	480,779	628,230	603,260	7,277,798
Sasakwa—													
Daily average	4,137	3,762	3,192	2,719	2,365	2,104	2,226	1,940	1,760	1,881	2,350	1,606	
Month	128,247	105,336	98,952	81,570	73,315	63,120	69,006	60,140	52,800	58,311	70,500	49,786	911,083
Beebe—													
Daily average	2,498	2,510	2,288	2,563	2,571	2,510	2,416	2,175	2,265	2,562	2,875	2,614	
Month	77,438	70,280	70,928	76,890	79,701	75,300	74,896	67,425	67,950	79,422	86,250	81,034	907,514
Henryetta, Deaner-Lyons, etc.—													
Daily average	5,861	5,556	5,418	5,337	5,609	5,217	5,235	5,019	4,963	4,912	4,777	4,616	
Month	181,691	155,568	167,958	160,110	173,879	156,510	162,285	155,589	148,890	152,272	143,310	143,096	1,901,158
Wewoka—													
Daily average	6,115	8,128	8,453	8,954	8,884	8,635	8,370	5,708	4,712	6,808	9,243	9,045	
Month	189,565	227,584	262,043	268,620	275,404	259,050	274,970	176,948	141,360	211,048	277,290	280,395	2,844,277
Cromwell—													
Daily average	4,206	4,810	4,657	4,808	5,485	4,972	5,605	5,736	5,664	5,551	5,428	5,417	
Month	130,386	134,680	144,367	144,240	170,035	149,160	173,755	177,816	169,920	172,081	162,840	167,927	1,897,207
Papoose-Gilcrease—													
Daily average	1,930	2,075	2,018	1,996	2,131	2,007	2,017	1,914	1,896	1,826	1,879	1,817	
Month	59,830	58,100	62,558	59,880	66,061	60,210	62,527	59,334	56,880	56,606	56,370	56,327	714,683
Jarvis-Holtm—													
Daily average	252	258	221	227	229	226	235	216	205	202	199	192	
Month	7,812	7,224	6,851	6,810	7,099	6,780	7,285	6,696	6,150	6,262	5,970	5,952	80,891
Welcetka—													
Daily average	955	1,065	881	894	718	723	638	596	603	595	583	577	
Month	29,605	29,820	27,311	26,820	22,258	21,690	19,778	18,476	18,090	18,445	17,490	17,887	267,670
Holdenville—													
Daily average	369	456	419	451	378	406	420	236	289	209	459	416	
Month	11,439	12,768	12,989	13,530	11,718	12,180	13,020	7,316	8,670	6,479	13,770	12,896	136,775
Yeager—													
Daily average	372	476	456	421	463	451	465	414	396	390	397	383	
Month	11,532	13,328	14,136	12,630	14,353	13,530	14,415	12,834	11,880	12,090	11,910	11,873	154,511
Miscellaneous—													
Daily average	275	280	267	270	263	257	96	54	175	209	297	281	
Month	8,525	7,840	8,277	8,100	8,153	7,710	2,976	1,674	5,250	6,479	8,910	8,711	82,605
CREEK AND TULSA COUNTIES:													
Glen Pool, Jenks, Kiefer—													
Daily average	6,580	5,914	5,825	6,734	5,447	5,411	5,447	4,844	4,801	4,147	4,453	4,191	
Month	203,980	165,592	180,575	202,020	168,857	162,330	168,857	150,164	144,030	128,557	133,590	129,921	1,938,473
Sapulpa and Fisher—													
Daily average	424	433	388	421	476	440	452	411	402	413	401	402	
Month	13,144	12,124	12,028	12,630	14,756	13,200	14,012	12,741	12,060	12,803	12,030	12,462	153,990
Cushing, Shamrock—													
Daily average	12,429	12,829	13,928	13,506	13,223	13,017	12,495	12,270	13,018	12,149	12,268	11,987	
Month	385,299	359,212	431,768	405,180	409,913	390,510	387,345	380,370	390,540	376,619	368,040	371,597	4,656,392
Bristow, Kellyville and Depew—													
Daily average	11,813	11,654	10,960	10,680	10,098	10,008	9,427	9,506	9,697	9,364	8,888	8,406	
Month	366,203	326,312	339,760	320,400	313,038	300,240	292,237	294,686	290,910	290,284	266,640	260,586	3,661,296
Pickett, Prairie and North Bristow—													
Daily average	1,597	1,635	1,511	1,491	1,417	1,362	1,301	1,114	1,227	1,202	1,116	1,120	
Month	49,507	45,780	46,841	44,730	43,927	40,860	40,331	34,534	36,810	37,262	33,480	34,720	488,782
Eastern Bristow or Slick—													
Daily average	4,288	4,310	4,183	4,104	4,496	4,110	3,378	3,190	3,108	3,436	3,491	3,415	
Month	132,928	120,680	129,673	123,120	139,376	123,300	104,718	98,890	93,240	106,516	104,730	105,865	1,383,036
PAWNEE COUNTY:													
Cleveland—													
Daily average	2,333	2,369	2,383	2,309	2,341	2,265	2,222	2,239	1,525	1,568	1,517	1,512	
Month	72,323	66,332	73,873	69,270	72,571	67,950	68,882	69,409	45,750	48,608	45,510	46,872	747,350
Keystone-Manford—													
Daily average	1,632	1,721	1,842	1,699	1,644	1,613	1,490	1,486	2,301	2,453	2,191	2,087	
Month	50,592	48,188	57,102	50,970	50,964	48,390	46,190	46,066	69,030	76,043	65,730	64,697	673,962
Jennings—													
Daily average	1,685	1,685	1,355	1,808	1,847	1,802	2,124	2,158	2,155	2,211	2,216	2,173	
Month	52,235	47,180	42,005	54,240	57,257	54,060	65,844	66,898	64,650	68,541	66,480	67,363	706,753
Otoe—													
Daily average	336	324	321	319	321	311	386	360	357	349	366	348	
Month	10,416	9,072	9,951	9,570	9,951	9,330	11,966	11,160	10,710	10,819	10,980	10,788	124,713
Ralston-Masham—													
Daily average	101	102	102	101	99	101	100	102	101	93	97	91	
Month	3,131	2,856	3,162	3,030	3,069	3,030	3,100	3,162	3,030	2,883	2,910	2,821	36,184
PAYNE COUNTY:													
Yale, Quay, Ingalls-Magnolia—													
Daily average	2,985	3,186	2,930	3,063	3,032	2,976	3,067	2,867	4,147	3,996	3,867	3,742	
Month	92,535	89,208	90,830	91,890	93,992	89,280	95,077	88,877	124,410	123,876	116,010	116,002	1,211,987
North Cushing—													
Daily average	1,457	1,937	1,580	1,752	1,727	1,694	886	924	1,444	1,393	1,309	1,313	
Month	45,167	54,236	48,980	52,560	53,537	50,820	27,466	28,644	43,320	43,183	39,270	40,703	527,886
South Cushing—													
Daily average	92	92	88	102	102	97	53	48	22	.....	.....	.....	
Month	2,852	2,576	2,728	3,060	3,162	2,910	1,643	1,488	660	.....	.....	.....	21,079
Mehan-Ripley—													
Daily average	1,274	992	994	1,140	1,114	1,083	581	556	485	521	507	514	
Month	39,494	27,804	30,814	34,200	34,534	32,490	18,011	17,236	14,550	16,151	15,210	15,934	296,428
OKLAHOMA COUNTY:													
Oklahoma City—													
Daily average	84,609	90,854	134,619	166,142	162,875	172,120	160,307	22,569	10,722	111,845	175,422	179,512	
Month	2,622,879	2,543,912	4,173,189	4,984,260	5,049,125	5,163,600	4,969,517	699,639	321,660	3,467,195	5,262,660	5,564,872	44,822,598
LINCOLN COUNTY:													
Stroud—													
Daily average	577	769	748	734	709	696	703	672	671	668	636	624	
Month	17,887	21,532	23,188	22,020	21,979	20,880	21,793	20,832	20,130	20,708	19,080	19,344	249,373
Davenport—													
Daily average	908	977	981	936	987	943	880	822	897	882	879	866	
Month	28,148	27,356	30,411	28,080	30,597	28,290	27,280	25,482	26,910	27,342	26,370	26,846	325,112
Kendrick—													
Daily average	147	191	197	201	191	190	184	154	142	141	142	137	
Month	4,557	5,348	6,107	6,030	5,921	5,700	5,704	4,774	4,260	4,371	4,260	4,247	61,279
Chandler—													
Daily average	1,280	1,373	1,350	1,293	2,414	2,117	1,797	840	464	2,099	3,472	3,625	
Month	39,680	38,444	41,850	38,790	74,834	63,510	55,707	26,040	13,920	65,069	104,160	112,375	674,379
KAY, GRANT AND NOBLE COUNTIES:													
Blackwell—													
Daily average	883	910	855	864	858	842	785	800	752	809	805	794	
Month	27,373	25,480	26,505	25,920	26,598	25,260	24,335	24,800	22,560	25,079	24,150	24,614	302,674
Vernon—													
Daily average	504	492	549	520	552	511	523	471	448	526	492	496	
Month	15,624	13,776	17,019	15,600	17,112	15,330	16,213	14,601	13,440	16,306	14,760	15,376	185,157

(Table continued on next page)

No. 1 Little, NW cor. SW, Section 30-7s-6, which bailed 110 bbls. of oil from sand at 486-88 feet. Other wells were completed in the area and a small refinery was erected which is taking the crude oil from the wells.

Seminole's Good Showing

Greater Seminole area consisting of 19 pools in Seminole and Pottawatomie Counties continued its remarkable showing from a production standpoint. A 10-day gauge was taken of all the wells in the area in November and the gauges totaled 313,787 bbls. The allowable for the field is 155,000 bbls. a day. The total wells producing in the Greater Seminole area totaled 2,599 wells on December 1, 1931.

An open flow potential gauge was taken of the Greater Seminole area in March, which was the first taken in 10 months. The results of these tests indicated that the district was capable of making almost double the volume of oil it was being allowed to produce under proration. The open flow gauge then was 359,005 bbls. a day.

During the year a number of the wells were plugged and abandoned. These were exhausted oil wells and some were making so much water that they had become unprofitable.

Among the important wildcat tests in the Greater Seminole area was Mid-Continent Petroleum Corp.'s No. 1 Fish, SE cor. SW NW, Section 2-6-4, in the Sacred Heart area of Pottawatomie County, which found a showing of water in the Simpson sand at 4,255 feet and was drilling deeper at 4,360 feet the last day of the year. The well stimulated leasing in the area and offset leases to the well were sold as high as $450 an acre.

The activity in the southern part of the State was limited to the development of the proven areas. Deeper drilling in Grady and Caddo Counties is expected to be the next major development. The two important pools in those counties are producing from shallow sands, with the exception of a few wells in the Cement Field in Caddo County, which has wells that found showings of oil and gas at 4,800 feet and in another test as deep as 10,079 feet.

West Chandler

The West Chandler Field in Lincoln County became a major area in 1931. The deep sand production was found in

(Continued on Page 113)

OKLAHOMA (Continued)

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
Otstot—													
Daily average	820	869	828	961	880	843	813	707	824	932	915	880	
Month	25,420	24,332	25,668	28,830	27,280	25,290	25,203	21,917	25,020	28,892	27,450	27,280	312,582
Deer Creek—													
Daily average	602	624	606	593	601	568	548	603	513	490	312	314	
Month	18,662	17,472	18,600	17,790	18,631	17,040	16,988	18,693	15,390	15,190	9,360	9,734	193,556
Ponca City—													
Daily average	526	476	453	503	496	503	462	456	433	486	406	419	
Month	16,306	13,328	14,198	15,240	15,376	15,090	14,322	14,136	12,990	15,066	12,180	12,989	171,221
Mervine—													
Daily average	254	227	307	223	231	219	214	197	196	189	175	177	
Month	7,874	6,356	9,517	6,690	7,161	6,570	6,634	6,107	5,880	5,859	5,250	5,487	79,385
Braman—													
Daily average	1,953	1,931	1,884	2,112	1,955	1,911	1,929	1,943	2,031	1,996	1,913	1,906	
Month	60,543	54,068	58,404	63,360	60,605	57,330	59,799	60,233	60,930	61,876	57,390	59,086	713,624
Hubbard—													
Daily average	950	929	915	971	986	926	1,077	1,117	1,071	1,068	970	953	
Month	30,690	26,012	28,355	29,220	30,566	27,780	33,387	34,627	32,130	33,108	29,100	29,543	365,458
Thomas—													
Daily average	595	577	602	584	556	547	536	417	421	442	406	406	
Month	18,445	16,156	18,662	17,520	17,236	16,410	16,616	12,927	12,630	13,702	12,180	12,586	185,070
Garrett—													
Daily average	5	5	13	35	31	29	24	33	34	26	23	22	
Month	155	140	403	1,050	961	870	744	1,023	1,020	806	690	682	8,544
Tonkawa—													
Daily average	4,897	5,290	6,132	5,732	5,482	5,260	5,467	5,348	5,688	5,509	5,355	5,309	
Month	151,807	148,120	190,092	171,960	169,942	157,800	169,477	165,788	170,640	170,779	160,650	164,579	1,991,634
Billings—													
Daily average	162	172	182	181	196	152	144	159	143	177	156	160	
Month	5,022	4,816	5,642	5,430	6,076	5,460	4,464	4,929	4,290	5,487	4,770	4,960	61,346
Perry and miscellaneous—													
Daily average	1,194	1,237	1,554	1,444	1,304	1,279	558	522	548	928	1,418	1,204	
Month	37,014	34,636	48,174	43,320	40,424	38,370	17,298	16,182	16,440	28,768	42,540	37,324	400,490
GARFIELD COUNTY:													
Garber—													
Daily average	3,264	3,939	3,945	3,852	3,897	3,816	3,497	3,517	3,404	3,235	3,076	3,107	
Month	101,184	110,292	122,295	115,560	120,807	114,480	108,407	109,027	102,120	100,285	92,280	96,317	1,293,054
LOGAN COUNTY:													
Lovell—													
Daily average	668	612	577	559	561	552	572	503	576	488	471	477	
Month	20,708	17,136	17,887	16,770	17,391	16,560	17,732	15,593	17,280	15,128	14,130	14,787	201,102
Marshall—													
Daily average	3,450	3,345	3,045	3,065	3,150	3,093	2,814	2,677	2,854	1,905	2,678	2,668	
Month	106,950	93,660	94,395	91,950	97,650	92,790	87,234	82,987	85,620	59,055	80,340	82,708	1,055,339
CARTER COUNTY:													
Healdton—													
Daily average	10,354	10,637	10,557	10,012	11,459	11,262	11,389	11,400	11,460	11,361	11,243	11,160	
Month	320,974	297,668	327,267	300,360	355,229	337,860	353,059	353,400	343,800	352,191	337,290	345,960	4,025,058
Hewitt—													
Daily average	6,031	6,122	6,096	5,779	6,061	5,980	5,461	5,819	5,787	5,875	5,737	5,816	
Month	186,961	171,416	189,038	173,370	187,891	179,400	169,291	180,389	173,610	182,125	172,110	180,296	2,145,897
Graham—													
Daily average	2,183	2,319	2,349	2,362	2,218	2,232	2,142	2,223	2,194	2,162	2,104	2,114	
Month	67,673	64,932	72,819	70,860	68,758	66,960	66,402	68,913	65,820	67,022	63,120	65,534	808,813
Brock—													
Daily average	18	18	18	17	18	17	17	18	27	24	.....	.....	
Month	558	504	558	510	558	510	527	558	810	744	.....	.....	5,837
Fox—													
Daily average	1,712	1,765	1,825	1,804	1,849	1,836	1,826	1,824	1,757	1,825	1,762	1,761	
Month	53,072	49,420	56,575	54,120	57,319	55,080	56,606	56,854	52,710	56,575	52,860	54,591	655,782
Sholom Alechem—													
Daily average	12,711	12,839	13,205	13,482	13,989	13,813	13,783	7,805	8,145	13,504	13,672	13,610	
Month	394,041	359,492	409,355	404,460	433,659	414,390	427,273	241,955	244,350	418,624	410,160	421,910	4,579,669
STEPHENS AND COTTON COUNTIES:													
Loco-Milroy—													
Daily average	1,445	1,377	1,341	1,329	1,364	1,330	1,297	1,293	1,283	1,259	1,227	1,211	
Month	44,795	38,556	41,571	39,870	42,284	39,900	40,207	40,083	38,490	39,029	36,810	37,541	479,136
Comanche—													
Daily average	1,129	1,536	1,423	1,602	1,527	1,536	1,226	1,741	1,525	1,330	1,399	1,380	
Month	34,999	43,008	44,113	48,060	47,337	46,080	38,006	53,971	46,050	41,230	41,970	42,780	527,604
Duncan—													
Daily average	3,590	3,825	3,574	3,380	3,500	3,461	3,674	3,634	3,478	3,593	3,411	3,417	
Month	111,290	107,100	110,794	101,400	108,500	103,830	113,894	112,654	104,340	111,383	102,330	105,927	1,293,442
Walters—													
Daily average	2,173	2,282	2,177	2,043	2,686	2,593	1,998	2,611	2,669	2,320	1,741	1,710	
Month	67,363	63,896	67,487	61,290	83,266	77,790	61,938	80,941	80,070	71,920	52,230	53,010	821,201
Kilgore—													
Daily average	260	259	256	246	243	239	248	233	264	254	255	253	
Month	8,060	7,252	7,936	7,380	7,533	7,170	7,688	7,223	7,920	7,874	7,650	7,843	91,529
JEFFERSON COUNTY:													
Hambro, etc.—													
Daily average	1,973	2,044	2,277	2,261	2,245	2,210	1,838	1,425	2,325	2,287	2,198	2,127	
Month	61,163	57,232	70,587	66,030	69,595	66,300	56,978	44,175	69,750	70,897	65,940	65,937	764,584
4s-6w—													
Daily average	85	101	105	106	89	91	83	82	83	82	75	79	
Month	2,635	2,824	3,255	3,180	2,769	2,730	2,573	2,542	2,490	2,542	2,250	2,449	32,439
CADDO COUNTY:													
Cement—													
Daily average	4,362	4,044	3,788	3,730	3,620	3,575	3,112	2,994	2,842	2,819	2,684	2,666	
Month	135,222	113,232	117,428	111,900	112,220	107,250	96,472	92,814	85,260	87,389	80,520	82,646	1,222,353
GARVIN COUNTY:													
Robberson—													
Daily average	1,662	1,660	1,589	1,709	1,855	1,762	1,826	1,795	1,789	1,666	1,646	1,639	
Month	51,522	46,480	49,259	54,270	57,505	52,860	56,606	55,645	53,670	51,646	49,380	50,809	626,841
GRADY COUNTY:													
Knox—													
Daily average	1,854	1,958	2,087	2,089	2,292	2,114	2,189	2,151	2,137	2,081	2,123	2,097	
Month	57,474	54,824	64,697	62,670	71,052	63,420	67,859	66,681	64,110	64,511	63,690	65,007	765,995
BECKHAM COUNTY:													
Sayre—													
Daily average	36	36	34	29	29	30	26	27	26	24	11	10	
Month	1,116	1,008	1,054	870	899	900	806	837	780	744	330	310	9,654
MARSHALL COUNTY:													
Madill—													
Daily average	394	386	381	326	275	283	264	269	256	273	305	298	
Month	12,214	10,808	11,811	9,780	8,525	8,490	8,184	8,339	7,680	8,463	9,150	9,238	112,632
Daily average	478,063	483,285	536,377	559,255	559,157	555,940	529,680	307,009	264,896	417,803	547,691	535,429	481,581
Total 1931	14,850,953	13,531,980	16,627,687	16,815,990	17,333,867	16,678,200	16,420,080	9,517,279	7,946,880	12,951,893	16,430,730	16,598,299	175,702,841
Total 1930	20,882,954	17,977,624	19,115,406	19,541,310	20,587,503	19,754,700	18,932,514	17,162,034	16,599,120	16,632,523	14,941,770	15,057,103	216,114,591
Total 1929	22,575,874	20,464,164	20,838,262	20,235,390	21,345,453	20,561,112	22,371,925	22,429,622	21,299,490	20,821,646	19,193,760	20,092,876	252,229,474
Total 1928	20,978,320	19,294,426	20,162,524	19,096,920	19,442,355	18,482,981	18,809,188	20,840,804	22,456,860	23,431,071	22,078,680	22,425,722	247,500,851
Total 1927	19,035,426	19,752,348	22,480,921	22,208,130	23,258,463	22,830,330	26,522,546	26,283,350	24,111,660	24,247,053	23,083,380	22,208,417	276,022,024
Total 1926	13,674,813	12,392,016	14,312,886	14,468,190	14,507,008	14,073,510	14,657,482	14,618,236	14,466,510	15,720,689	16,376,950	17,882,908	177,651,190

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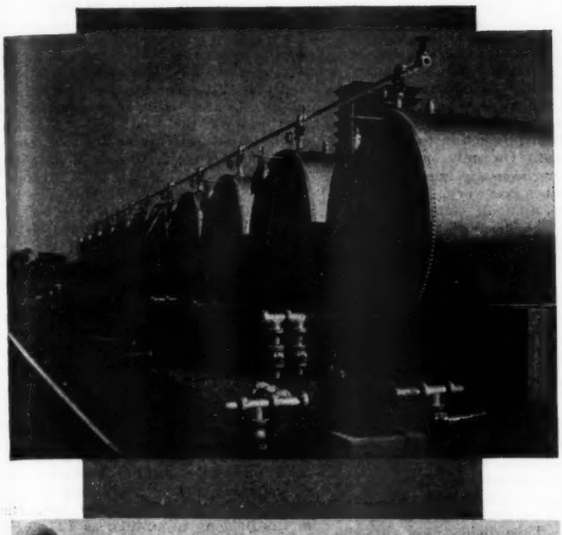

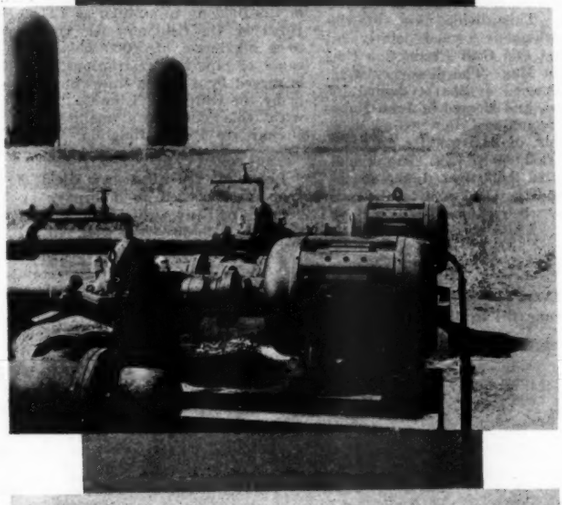

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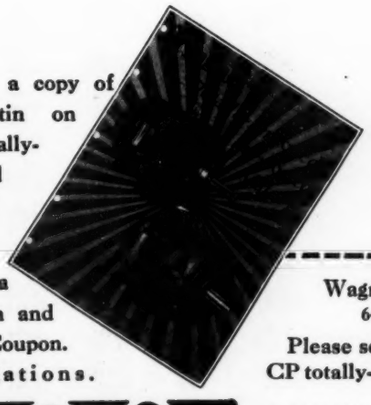

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MOTORS TRANSFORMERS FANS BRAKES

Eight New Pools on Gulf Coast in 1931

Controlled Ownership and Unfavorable Market Holds Back Development of Important New Areas in Two States

By Nell Williams

Although general exploration and development during 1931 was curtailed to the lowest level in many years, the Gulf Coast continued to add to its potential oil reserves by the opening of new fields and sands and by extensions of the older fields. The restricted operations, however, by which means coastal operators planned to cut daily oil output from the record high marks attained during the previous year to within limits warranted, by conditions of the industry, accomplished the purpose intended. Consequently, the total production of the district fell off 12,707,519 bbls. during the year with a decline in the daily average from 195,070 bbls. in 1930 to 160,255 bbls. in 1931.

Eight entirely new fields were opened in the Gulf Coast proper during the year. These do not include the McFaddin district of northern Refugio and southwestern Victoria Counties, which is in what is known as the lower coastal country. The latter area also, although first oil was not brought in until late in 1931, has been productive of gas since 1929. Of the eight fields listed as 1931 discoveries, one is included which is located outside of what generally is accepted as the Gulf Coast salt dome territory. This field, which officially has been designated as Beach, is in central Montgomery County, just north of the coastal salt dome tier of counties bordering the Gulf of Mexico, and thus is classed in the Gulf Coast.

May Develop Big Play

The latter field, one of the "last minute" discoveries of the year, the discovery well being completed in December, is the only one of the eight which offers possibilities of any extensive wildcat play. So far the discovery well, Strake Oil Corp.'s No. 1 South Texas Development Co., Theodore Slade Survey, is rated only as a 15,000,000-foot wet gas well but indications point to an oil pool. The well is good for 80 to 100 bbls. of very high gravity oil per day which is trapped off in separators. Although the owner of the well holds approximately 8,000 acres in that district, this in virgin territory as far as development is concerned and it is uncertain which way future production will go. The well is producing from the Dibollensis zone at the base of the Jackson, or else from the upper Yequa at a total depth of 4,991 feet and is in the same horizon from which the Pettus Field of Bee County, Southwest Texas, is producing. This is a major trend which has been traced more than 300 miles down the coast and includes such fields as Pettus and Raccoon Bend.

The other seven new coastal fields in the order of their discovery are: Leesville, LaFourche County, Louisiana; Rabbs Ridge (Clear Lake), Fort Bend County, Texas; Lake Grand Ecaille, Plaquemines Parish; Bayou Choctaw, Iberville Parish; Manvel, Brazoria County; Cameron Meadows, Cameron Parish; Iowa, which is on the Calcasieu-Jefferson Davis Parish line. All seven are on geophysically discovered salt domes or prospects. Lake Grand Ecaille and Bayou Choctaw are the only proven salt domes in the list.

Controlled Ownership

In each instance these seven fields are under controlled ownership and their development can be carried on systematically and conservatively and in line with requirements of their respective owners. Thus they represent only new potential petroleum reserves and not a lot of new flush production to be thrown on the market. On only one of these fields has there been any important drilling activity since discovery. In this field, Rabbs Ridge, nine oil wells were completed up to the close of the year. At Leesville and Bayou Choctaw, one additional well each has been brought in while at the others the discovery wells so far are the only producers. In development of these controlled fields under present condition only one rig usually is kept running but at two of the fields, Cameron Meadows and Iowa, no additional tests have been started.

Rabbs Ridge

Rabbs Ridge, which has been called by numerous names such as Thompson, Clear Lake and Lockwood, but which now has been officially designated as Rabbs Ridge, as mentioned, has been the only one of the new fields to receive any important development. This field, most of the acreage of which is owned jointly by Cullen & West and Gulf Production Co., was opened in May. The discovery well, No. 1-A Lockwood & Sharp, drilled by Cullen & West, and located in John Rabb Survey, was completed flowing an estimated 300 bbls. of 24.5 gravity oil daily from a sand at 3,050-87 feet. The second well was located 2,500 feet to the southwest and found the sand at a total depth of 3,476 feet, being completed for 85 bbls. hourly. This was offset to the south and to the west for two more wells at approximately 3,500 feet, but a fourth well, No. 2 George, in that particular vicinity, located only approximately 600 feet east of the south offset 3,500-foot well, tested salt water in that horizon and was deepened, finding a deep sand, where at a total depth of 5,201 feet it flowed at the rate of 27 bbls. per hour. About the same time, another test, No. 2-A Lockwood & Sharp, located 800 feet north and 20 degrees west of the 3,087-foot discovery well, which is approximately three-quarters of a mile to the north of the deep George well, failed to make a commercial well in the shallower sand and was deepened and found the deep sand at a total depth of 5,151 feet, making a well flowing initially at the rate of 136 bbls. per hour. Subsequent development in the field has been in the deep sand in which three additional wells have been completed.

The deep wells at Rabbs Ridge have been unusually prolific producers with considerable gas pressure and have resulted in running the daily production of the field up to as high as 12,000 bbls. However, the field now has been limited to a maximum of 9,000 bbls. daily because of pipe line restrictions. The field is served by a 6-inch line which was put in by the Gulf Pipe Line Co., connecting with this company's main line from Orchard to Pierce Junction.

Leesville Discovery

Leesville, the first new field of the year, was opened in February by The Texas Company, which controls all the acreage. The discovery well, No. 2 L.L.&

GULF COAST

SOUTH TEXAS AND SOUTH LOUISIANA

Daily Average and Monthly Production of Crude Oil in 1931

Texas

Field—	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
ALLEN:													
Daily average	162	74	27	20	8	16	14	9	12	12	16	16	
Month	5,018	2,072	820	596	239	466	431	276	371	378	481	496	11,654
BARBERS HILL:													
Daily average	22,128	21,510	19,688	27,050	27,677	23,493	20,297	19,921	19,246	20,282	23,400	21,210	
Month	685,956	602,280	610,326	811,504	857,196	704,793	629,210	617,554	577,381	628,751	702,005	657,522	8,085,278
BATSON:													
Daily average	1,076	976	962	962	932	953	842	795	1,138	862	858	788	
Month	33,372	27,328	29,821	28,862	28,885	28,580	26,104	24,640	34,145	26,731	25,742	24,437	338,647
BIG CREEK:													
Daily average	3,517	2,751	2,940	3,200	2,850	2,598	2,258	2,081	1,777	1,678	1,573	1,489	
Month	109,025	77,028	91,144	95,998	88,353	77,934	69,996	64,516	53,297	52,005	47,189	46,143	872,629
BLUE RIDGE:													
Daily average	1,441	1,301	1,141	1,155	1,203	1,134	1,064	835	900	742	801	1,032	
Month	44,674	36,428	35,372	34,650	37,297	34,019	32,987	25,885	27,008	23,013	24,026	31,986	387,350
BRENHAM:													
Daily average	142	140	51	54	62	86	35	29	25	26	25	84	
Month	4,420	3,920	1,573	1,625	1,922	2,587	1,085	898	750	806	753	2,605	22,944
BOLING:													
Daily average	946	528	694	762	699	928	792	715	697	622	649	671	
Month	29,320	14,784	21,519	22,861	21,654	27,847	24,553	22,167	20,908	19,275	19,474	20,805	265,167
CLAY CREEK:													
Daily average	1,778	2,124	2,234	2,259	2,106	1,476	1,069	532	560	573	574	567	
Month	55,132	59,472	69,255	67,764	74,591	44,277	33,137	16,491	16,790	17,765	17,220	17,569	489,463
CLEAR LAKE:													
Daily average	.....	.....	.....	.....	55	1,303	2,289	2,645	2,118	2,215	2,746	5,493	
Month	.....	.....	.....	.....	1,717	39,081	70,960	81,997	63,538	68,670	142,374	263,287	731,624
DAMON MOUND:													
Daily average	593	611	585	538	1,198	1,113	1,075	933	838	777	760	1,186	
Month	18,395	17,108	18,140	16,148	37,143	33,381	33,329	29,079	25,144	24,079	22,896	36,751	311,592
ESPERSON:													
Daily average	2,846	1,945	2,441	2,185	1,980	1,829	1,877	2,043	1,742	1,624	1,664	1,596	
Month	88,229	54,460	75,674	65,547	61,383	54,865	58,184	63,330	52,272	50,339	49,921	49,462	723,676
FANNETT:													
Daily average	612	689	472	456	470	478	465	355	471	429	454	454	
Month	18,968	19,292	14,632	13,495	14,570	14,325	14,416	11,004	14,130	13,298	13,920	14,070	176,130
GOOSE CREEK:													
Daily average	4,467	3,122	4,620	4,362	4,846	4,423	4,282	4,139	3,732	3,799	3,760	2,865	
Month	138,471	87,416	143,220	130,859	150,212	132,678	132,743	128,309	111,946	117,764	112,802	119,802	1,506,222
HANKAMER:													
Daily average	2,305	2,271	2,401	2,494	2,502	2,125	2,182	1,944	1,843	1,993	1,966	2,002	
Month	71,442	66,388	74,436	74,826	77,570	63,757	67,645	60,265	55,299	61,778	58,975	62,075	794,456
HIGH ISLAND:													
Daily average	995	287	488	390	395	357	304	1,028	1,011	974	1,419	1,463	
Month	30,840	8,036	15,128	11,701	12,255	10,717	9,421	31,863	30,344	30,202	42,573	45,048	278,128
HULL:													
Daily average	7,686	6,386	6,268	6,542	6,695	6,156	5,431	5,129	5,384	6,020	6,194	5,792	
Month	219,666	178,640	194,308	196,283	207,543	184,694	168,392	158,994	176,526	186,607	185,819	179,546	2,237,018
HUMBLE:													
Daily average	10,757	9,026	9,435	10,675	9,151	9,296	8,054	7,107	6,774	6,972	6,278	6,529	
Month	333,481	252,728	292,491	320,254	283,679	278,886	249,671	220,318	203,225	216,122	188,337	202,393	3,041,585
LOST LAKE:													
Daily average	431	341	292	279	255	240	235	254	239	241	236	218	
Month	13,362	9,548	9,053	8,366	7,893	7,211	7,284	7,875	7,167	7,463	7,084	6,771	99,082
MANVEL:													
Daily average	.....	.....	.....	.....	.....	.....	.....	.....	1,018	259	750	522	
Month	.....	.....	.....	.....	.....	.....	.....	.....	30,532	8,034	22,501	16,188	77,255

(Table continued on next page)

E., 4,396 feet south and 705 feet east of the NW cor. of Section 26-21s-22e, the second test drilled on the prospect, originally was completed in sand at 3,028-46 feet, where it came in flowing at the rate of 325 bbls. daily, the oil being approximately 24 gravity. This well later, in April, was deepened to another sand at 3,598-3,628 feet, where it was completed for 1,400 bbls. daily, and since then, in August, it has been deepened to a third sand at 3,665-89 feet, in which horizon it was brought in flowing 1,400 bbls. daily. A second producer, No. 3 L.L.&E., 237 feet west and 43 feet south of No. 2, was completed last September in sand at 3,653-81 feet for 1,500 bbls., and a rig is up for another test.

Most Easterly Coastal Field

Lake Grand Ecaille, which in the future will be designated as Lake Washington, is the most easterly of coastal fields to date. It is located in the marshes of southern Plaquemines Parish in the extreme southeastern tip of Louisiana. The discovery well, No. 4 Cockrell-Moran, Section 14-20s-26e, was the fifth test drilled on the dome. This well, completed June 18, came in flowing 500 bbls. of pipe line oil in the first nine hours through a three-eighths inch choke from cap rock at 1,141-58 feet. Cap, however, was topped at 1,074 feet. This is the only one of the new fields which is producing from the cap rock. Cap rock fields in the past have been the coast's most prolific producers, including such as Spindletop, Humble and Sour Lake. One additional test has been drilled at Lake Grand Ecaille for it failed to make a well. Development of this dome is being done by Humble Oil & Refining Co. although Gulf Refining Co. and Shell Petroleum Corp. are joint owners.

Bayou Choctaw

Two days after the opening of Lake Grand Ecaille, the discovery well of Bayou Choctaw, Iberville Parish, was brought in. This dome also had been proved by the finding of cap rock and salt in a series of shallow tests which previously had been drilled by the Texas Gulf Sulphur Co. in exploration for sulphur. The discovery oil well was drilled by Standard Oil Co. of Louisiana in its No. 1 Gay, Section 52-9s-11e, which came in estimated as good for 3,000 bbls. daily although its production was held to a few hundred barrels. This oil tested 29.6 gravity and is from a sand at 4,332-53 feet. A second well, No. 1 Myrtle Grove, was started immediately. Although just 250 feet west of the first well, it went into salt (no cap rock) from 2,566 feet to 2,712 feet and then was plugged back to a sand at a total depth of 2,535 feet, in which horizon it was completed flowing 75 bbls. daily. The first well missed the salt. Bayou Choctaw is owned jointly by Standard and Gulf Refining Co.

Manvel Field

The new Manvel Field, located in northern Brazoria County and 20 miles to the south of Houston, was opened September 9 by The Texas Company's No. 1 Belcher, Lot 8, Block A, of the Suburban Gardens Subdivision, Harvey N. Little Survey. This well flowed approximately 2,000 bbls. of 25.9 gravity pipe line oil through a three-quarter inch choke in the first day from a sand at 5,465-81 feet. For several days it maintained an almost steady flow around 1,600 bbls., but then began dropping off rapidly. Thinking the hole had been sanded up, operators went back into the well to clean it out but found that pressure of the well had blown the screen 20 feet off bottom, cutting off the sand. Before resetting screen, the hole was deepened 3 feet to 5,484 feet, at which depth the well was brought back in flowing 60 bbls. an hour. Although pressure at first was only 100 pounds on the tubing and 300 pounds on the casing, this rapidly increased to above 2,000 pounds, cutting back the oil production. The well again was killed because of danger of sand cutting out connections and the hole was deepened to 5,494 feet, where screen was set for the third time Brought back in, the well flowed initially at the rate of 1,200 bbls. and has since been on production continuously, although considerable water has made its appearance.

The discovery well was the second test drilled on the prospect. The first, No. 1 Ewing, located three-quarters of a mile to the northwest of the Belcher producer, was drilled to a total depth of 7,648 feet where it was abandoned. It previously had encountered a sand at a total depth of 7,590 feet, in which it was tested for an estimated 50,000,000 feet of dry gas with a pressure of 1,500 pounds. This, however, failed to hold up longer than a few hours and was not of commercial value. A third test, No. 2 Belcher, now is drilling. Manvel, with the exception of a few small pieces and several outlying tracts, is owned entirely by The Texas Company.

Fields in the Marshes

The other two new fields, Cameron Meadows and Iowa, were opened by the Vacuum Oil Co., now the Magnolia Petroleum Co. Cameron Meadows, located in the marshes of southern Cameron Parish and reached only by boat, came in October 11 with the completion of No. 2 Cameron Meadows, the second test drilled. The first test, No. 1 Cameron Meadows, Section 21-14s-9w, previously had given indication of the field when in a sand at 3,850 feet it had been completed for 400,000 feet of gas making 100 bbls. of fluid, 2 per cent oil. That well had been drilled to a total depth of 5,248 feet and had encountered a number of sands showing oil and was in a sand at its total depth but because of a bad hole and stuck drill stem the deeper sands were not tested and the hole was sidetracked to the 3,850-foot sand. The second well was located 500 feet south of No. 1 and was drilled to the deep sand at 5,270 feet and completed for 1,000 bbls. of 41 gravity pipe line oil daily through a three-eighths inch choke, with a pressure of 800 pounds. Since then the well has been produced steadily around 600 bbls. daily, the oil being barged from the well to Beaumont, Tex. All acreage is held in one large block by the Vacuum Oil Co.

Iowa, the other field, is divided between Vacuum Oil Co. and Shell Petroleum Corp. Geophysical discovery of the prospect is credited to the Shell although the first test was drilled by the former company. This was No. 1 Waite, 225 feet out of the southeast corner of Section 12-9s-7w, and on the Calcasieu Parish side of the line (east line of Section 12 is line of Calcasieu and Jefferson Davis Parishes). The well first was completed last January in a sand at 5,001-08 feet flowing 600 bbls. of 29.9 gravity oil through a three-eighths inch choke but after being closed in for storage and then reopened it went quickly to water and was deepened, encountering another sand at 6,958-71 feet where it was brought in for 1,000 bbls. of 42 gravity oil on October 22. This well, since the laying by the Magnolia Pipe Line Co. of a short line to loading docks on the Calcasieu River, has been producing steadily around 600 bbls. daily. As the location of the well is in the southeast corner of the Vacuum block, Shell Petroleum Corp. since the first of this year has made location for two offsets, one directly south and the other diagonally southeast, and now is erecting derricks.

The McFaddin district in Refugio and Victoria Counties already has been proved as a gas field of considerable extent, the discovery well being completed in June, 1930.

The first oil producer was Humble Oil & Refining Co.'s No. 1 O'Connor, located in the John Keating Survey in northern

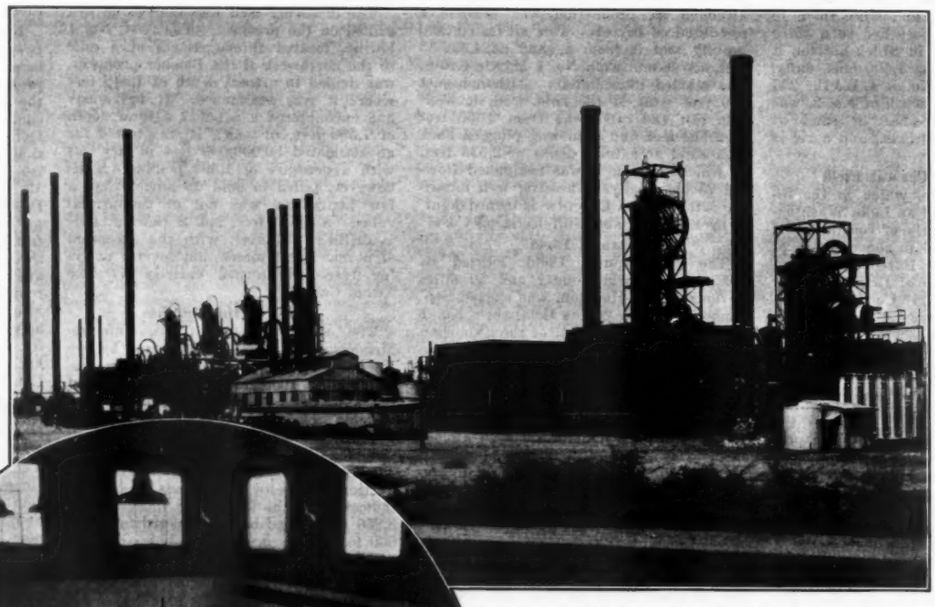
GULF COAST (Continued)

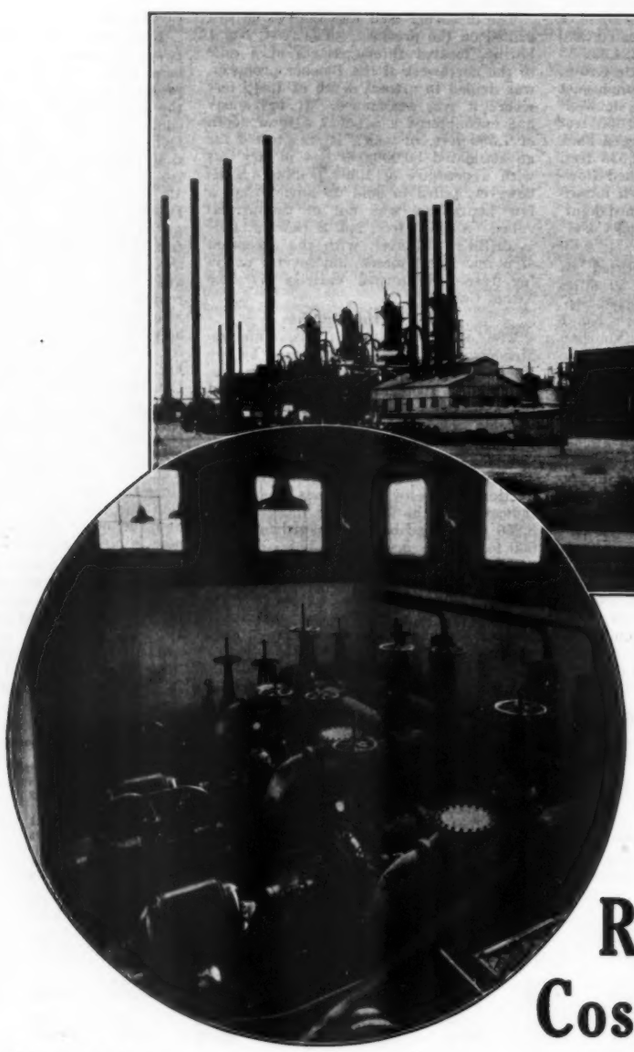
	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
MARKHAM:													
Daily average	210	169	170	194	192	173	153	411	1,361	1,601	1,475	1,814	
Month	6,502	4,732	5,274	5,822	5,954	5,196	4,748	12,744	40,830	49,631	44,248	56,244	241,925
MOSS BLUFF:													
Daily average	336	414	482	533	338	313	251	226	180	285	208	203	
Month	10,427	11,592	14,933	15,993	10,488	9,399	7,785	7,010	5,410	8,845	6,243	6,279	114,404
MYKAWA:													
Daily average	221	121	359	219	169	149	198	158	170	53	191	187	
Month	6,842	3,388	11,119	6,565	5,239	4,471	6,132	4,893	5,100	1,641	5,735	5,790	66,917
NASH:													
Daily average	268	278	239	239	186	200	155	139	171	172	323	181	
Month	8,306	7,784	7,417	7,171	5,761	5,997	4,803	4,311	5,114	5,332	9,690	5,620	77,306
NORTH DAYTON:													
Daily average	1,014	561	628	629	465	639	615	537	567	472	414	526	
Month	31,438	15,708	19,468	18,876	14,408	19,181	19,064	16,649	17,024	14,643	12,425	16,319	215,203
ORANGE:													
Daily average	2,174	1,630	1,801	1,907	1,833	1,716	1,348	1,518	1,447	1,464	1,601	1,504	
Month	67,381	45,640	55,834	57,203	56.825	51,487	41,790	47,057	43,398	45,377	48,026	46,633	606,651
ORCHARD:													
Daily average	2,462	2,127	1,775	1,711	907	1,108	1,132	1,101	1,292	876	982	834	
Month	76,339	59,416	55,030	51,336	28,120	33,241	35,096	34,138	38,769	27,149	29,457	25,852	493,943
PIERCE JUNCTION:													
Daily average	9,370	8,203	8,459	8,586	9,056	8,882	8,512	7,658	8,688	7,110	6,591	6,233	
Month	290,467	229,684	262,217	257,574	280.731	266,462	263,868	237,394	260,653	220,405	197,728	193,217	2,960,390
PORT NECHES:													
Daily average	1,607	1,688	1,499	1,483	1,398	1,317	1,243	1,173	1,141	1,251	1,373	1,302	
Month	49,818	47,264	46,469	44,464	43.338	39,497	38,527	36,362	34,220	38,787	41,194	40,366	500,306
RACCOON BEND:													
Daily average	8,633	8,953	9,226	8,601	8,017	7,548	7,057	6,704	6,150	6,319	5,929	5,415	
Month	267,617	250,684	286,005	258,031	248,529	226,447	218,763	207,828	184,500	195,889	177,870	167,872	2,690,035
REFUGIO:													
Daily average	29,605	33,213	30,817	31,831	28,719	28,470	26,677	23,412	19,230	20,742	18,496	14,904	
Month	917,742	929,964	955,327	954,926	890,299	854,111	826,994	725,776	576,900	642,995	554,886	462,017	9,291,937
ROCKLAND:													
Daily average	7	4	8	8	2	1	2	2	2	5	5	7	
Month	223	112	246	239	66	30	62	62	60	155	151	207	1,613
SARATOGA:													
Daily average	1,141	930	1,029	985	1,088	1,089	1,088	1,048	1,081	935	958	848	
Month	35,360	26,040	32,209	29,550	33,727	32,683	33,725	32,489	32,443	28,988	28,735	26,286	372,235
SOUR LAKE:													
Daily average	2,071	2,023	2,211	2,197	1,873	1,835	1,806	1,808	1,812	1,828	1,753	1,755	
Month	64,191	56,644	68,543	65,912	58,060	55,056	55,987	56,043	54,351	56,662	52,589	54,412	698,450
SOUTH LIBERTY:													
Daily average	2,756	2,490	2,216	1,978	1,959	1,846	1,815	1,623	1,609	1,491	1,566	1,525	
Month	85,440	69,720	68,700	59,338	60,722	55,377	56,262	50,314	48,256	46,233	46,981	47,283	694,626
SPINDLETOP:													
Daily average	13,275	12,613	11,321	10,272	9,542	8,717	8,227	7,605	6,770	5,560	6,208	5,598	
Month	411,535	353,164	350,951	308,167	295,832	261,509	255,034	235,549	203,092	172,378	186,237	173,546	3,209,994
SUGARLAND:													
Daily average	11,931	12,037	11,785	11,708	11,425	11,152	12,069	11,843	11,402	11,280	11,015	10,398	
Month	369,865	337,036	365,335	351,241	354,177	334,555	374,130	367,135	342,060	349,680	330,448	322,342	4,198,004
WEST COLUMBIA:													
Daily average	4,461	4,263	4,347	4,116	4,164	4,092	4,079	4,169	4,025	3,844	3,865	3,576	
Month	138,301	119,364	134,759	123,473	129,070	122,745	126,448	129,236	120,750	119,164	115,953	110,845	1,490,108
Daily average	152,325	145,883	143,121	150,574	144,718	137,251	128,992	121,724	117,123	115,389	119,089	114,777	132,532
Month	4,737,565	4,084,864	4,436,758	4,517,220	4,486,248	4,117,542	3,998,766	3,773,451	3,513,693	3,577,046	3,572,688	3,558,086	48,373,927

Louisiana

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
ANSE LA BUTTE:													
Daily average	68	50	46	68	66	56	61	59	61	58	59	38	
Month	2,104	1,400	1,419	2,045	2,046	1,688	1,895	1,826	1,840	1,790	1,774	1,180	21,007
BAYOU BLUE:													
Daily average	59	132	76	65	62	57	44	35	30	18	16	17	
Month	1,814	3,696	2,358	1,946	1,925	1,703	1,363	1,084	899	559	481	527	18,355
BAYOU BOUILLON:													
Daily average	106	118	146	119	112	129	100	29	.....	.....	.....	.....	
Month	3,297	3,304	4,528	3,569	3,474	3,867	3,102	890	.....	.....	.....	.....	26,031

(Table continued on next page)





General View: Cosden Refinery. Left: Electric Motor Driven Centrifugal Water Circulating Pumps in Service in Cosden Refinery.

Electricity Plays Major Role in Refining of Cosden Liquid Gas

General Offices:
Fort Worth
District Offices:
FORT WORTH
WICHITA FALLS
EASTLAND
SEYMOUR
SWEETWATER
BIG SPRING
MIDLAND
EAGLE PASS

Low first cost, economy of operation, dependability of service and freedom from accident hazards are only a few of the outstanding traits of the electric service employed by the Cosden Refinery, one of Big Spring's largest industries. Cosden's Liquid Gas, known the world over for its high octane content, is being refined in a completely electrified plant.

Investigate the many ways electric power can serve your refinery. Our engineers will gladly show you where additional electrical installations will increase the efficiency of your plant.

TEXAS ELECTRIC SERVICE COMPANY

Refugio County and just over the line (San Antonio River) from Victoria County, where the previous development had been done. The Humble well, which came in December 2 flowing an estimated 2,000 bbls. of 24 gravity pipe line oil daily from sand at 4,127-55 feet, is on a block of approximately 18,000 acres, which is a selection out of an original block of around 35,000 acres. At the time of the completion of this well the nearest production was The Texas Company's No. 2 McFaddin, the 2,000-foot gas well previously mentioned, which is 3½ miles to the northeast in Victoria County. Since then, on January 1, this year, The Texas Company has brought in the second oil producer of the district, its No. 3 McFaddin, located a little over a half mile to the north and west of the gas well, and in the general direction of the Humble well. The Texas Company's well is in an entirely different sand at 5,827-35 feet and is producing a light oil of about 40 gravity. It came in good for 600 bbls. daily through a quarter-inch choke. This well encountered numerous sands, several of which probably would have made high-pressure gas wells but these were passed up in the exploration for oil, which the majority of operators believed to exist in that area. It encountered the sand which is productive in the Humble well and at virtually the same level but tested salt water there.

Whether this district eventually will be proved as one large field with a multiplicity of sands or else a group of smaller pools as now is the case remains to be seen. So far, with the exception of four United Gas Co. wells, which are in one pool, all the wells are in different sands. In some instances, the sands have been correlated and a striking characteristic is that they are almost uniform in elevation and yet one well will make salt water while another will produce, or vice versa in another sand. The Texas Company's deep sand, which is in the Oligocene as contrasted to Miocene sands in the other wells of the district, also has been almost definitely identified as the same sand which is producing at a 5,400-5,500 foot level in the Refugio Field, 15 to 20 miles down the coast. The McFaddin district is on the same trend as Refugio and the discovery, development and nature of the two have been similar. The McFaddin district, however, is made up of large blocks of few ownerships and in control of a few major operators and thus there is no boom play as that which marked Refugio.

Extensions in Old Pools

In the salt dome district important extensions were made at Barbers Hill, East Hackberry, Humble and Markham, and on a number of other domes new production of some interest was uncovered. The Barbers Hill and East Hackberry discoveries were the only two which have occasioned any active drilling play.

New Shallow Pool

At East Hackberry, Cameron Parish, Louisiana, a new shallow sand pool was opened on top the dome by the completion in August of J. G. Sutton's No. 1 Irwin, 1,850 feet west and 200 feet north of the SE cor. NE SE Section 13-12s-10w, which came in flowing at the rate of 1,200 bbls. daily through chokes from a sand at 2,980-89 feet. This well was 1,500 feet northeast of a 2,600-foot sand pool opened and developed during 1930 and approximately 2,500 feet north of the production in the deeper sands which flank the south edge of the dome and which was developed during late 1927 and 1928. The Sutton discovery immediately was followed by a drilling play on the part of Calcasieu Oil Co. and Yount Lee Oil Co., which companies held offset acreage, and at the close of the year 13 wells had been completed and daily production of the dome, which had dropped to around 600 bbls. in July and early August, was increased rapidly to as high as 12,000 bbls., the highest it had been since the peak of the deep flank sand play in 1928.

Sun Oil Co. extended flank sand production at Humble to the extreme northwest side of the dome by its No. 26 Bender, which found sand at 3,349-89 feet and made a well good for 800 bbls. daily. This well is located about midway between the flank production on the extreme west side and that on the north and about a half mile out from the west edge of the shallow production. Completion of the well marked Sun's second attempt to prove production in that area and link the west and north flank production. The first attempt was No. 25 Bender, located 310 feet closer into the dome, which went into salt at 3,268-98 feet and plugged back to a shallower sand at 2,850 feet, testing salt water.

Markham's First Big Well

At Markham, Matagorda County, E. M. Hamill drilled a semiwildcat on the northeast side of the dome and opened a sand which has given the field its first important production. Markham has been productive since 1908 and a large number of wells have been drilled, but most of the wells have been small and in shallow sands on top the dome. The Hamill well, No. 1 Meyers (Sisk), is a half mile from production and in sand at 3,242-63 feet came in last July flowing 110 bbls. of pipe line oil in the first hour. Because of limited storage and outlet facilities at that time, it was choked down

MT. PLEASANT FIELD EXTENSION 1931 HIGH SPOT IN MICHIGAN

By Paul A. Elliott

Despite generally unfavorable conditions in the oil industry Michigan fields advanced during 1931 to a more important position in the national picture than at any time since the first commercial field was opened near Saginaw in 1925.

Potential daily production of both oil and natural gas was more than doubled, proved acreage was greatly increased, the largest single oil producer in the State's history was brought in and the new and most productive east pool was discovered in the Mount Pleasant area.

The Mount Pleasant Field, of central Michigan, became firmly established as the most important oil and gas producing area in the State. At the close of the year it was producing 17,000 bbls. per day and could have produced much more. Aggregate oil production of the area exceeded the total which had been produced at Muskegon, the former leading field of the State.

Although greater quantities of natural gas were discovered in the old Muskegon Field, which once had a potential daily open flow of 300,000,000 feet, the Mount Pleasant area took a leading position in this branch of the industry during 1931 with the discovery of several large wells in previously opened gas areas. Daily potential open flow surpassed 75,000,000 cubic feet in three pools.

Potential production increased from 9,000 bbls. on January 1, 1931, to about

(Continued on Page 114)

GULF COAST (Louisiana Continued)

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
BAYOU CHOCTAW:													
Daily average	.....	.....	.....	.....	.....	108	510	611	668	429	534	521	
Month	.....	.....	.....	.....	.....	3,237	15,808	18,945	20,042	13,300	16,017	16,166	103,515
BLACK BAYOU:													
Daily average	1,038	980	796	1,609	1,536	1,485	1,451	1,479	1,383	1,354	1,333	1,337	
Month	32,175	27,440	24,670	48,273	47,617	44,565	44,984	45,852	41,499	41,962	39,990	41,437	480,464
CAMERON MEADOWS:													
Daily average	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	332	
Month	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10,282	10,282
EDGERLY:													
Daily average	341	482	433	353	309	302	278	246	232	198	215	222	
Month	10,567	13,496	13,421	10,592	9,576	9,046	8,616	7,627	6,950	6,152	6,448	6,877	109,368
HACKBERRY:													
Daily average	5,024	3,446	2,845	2,582	2,280	1,793	1,354	1,413	4,592	8,341	10,864	10,458	
Month	155,727	96,488	88,197	77,454	70,680	53,774	41,974	43,804	137,741	258,558	325,928	324,196	1,674,521
IOWA:													
Daily average	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	43	517	
Month	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,294	16,018	17,312
JENNINGS:													
Daily average	802	588	729	761	677	696	769	736	665	458	643	566	
Month	24,862	16,464	22,605	22,831	20,988	20,869	23,837	22,813	19,958	14,202	19,292	17,564	246,285
LAKE BARRE:													
Daily average	2,462	3,138	2,841	2,418	2,014	1,783	1,470	2,622	2,580	4,022	4,641	4,206	
Month	76,331	87,864	88,068	72,540	62,431	53,478	45,571	81,288	77,396	124,688	139,225	130,381	1,039,241
LAKE GRAND ECAILLE:													
Daily average	.....	.....	.....	.....	.....	.....	.....	182	180	221	195	197	
Month	.....	.....	.....	.....	.....	.....	.....	5,639	5,403	6,849	5,853	6,100	29,844
LAKE PELTO:													
Daily average	170	138	116	110	101	106	85	62	60	68	82	68	
Month	5,257	3,864	3,599	3,309	3,137	3,175	2,638	1,920	1,789	2,121	2,458	2,098	35,365
LEESVILLE:													
Daily average	.....	91	7	223	352	144	53	1,030	791	581	468	1,261	
Month	.....	2,548	221	6,686	10,915	4,319	1,642	31,926	23,733	17,999	14,037	39,109	153,134
LOCKPORT:													
Daily average	4,855	4,906	5,053	6,622	10,434	5,993	5,432	5,284	4,281	4,416	4,554	4,409	
Month	150,510	137,368	156,644	198,656	323,449	179,780	168,395	163,803	128,429	136,909	136,619	136,668	2,017,230
PORT BARRE:													
Daily average	1,801	1,716	1,940	1,810	1,733	1,363	859	633	755	856	688	624	
Month	55,845	48,048	60,141	54,305	53,713	40,899	26,627	19,625	22,641	26,544	20,643	19,336	448,367
SORRENTO:													
Daily average	43	128	56	398	334	180	129	121	98	82	92	101	
Month	1,342	3,584	1,745	11,937	10,356	5,415	2,998	3,756	2,942	2,534	2,764	3,125	53,498
STARKS:													
Daily average	649	774	770	772	757	764	711	710	667	675	646	626	
Month	20,126	21,672	23,872	23,158	23,468	22,916	22,040	22,005	20,014	20,927	19,381	19,405	258,984
SULPHUR:													
Daily average	3,391	1,964	1,658	1,745	3,650	2,397	905	768	777	757	723	753	
Month	74,196	54,992	51,394	52,358	113,154	71,920	28,054	23,806	23,313	23,467	21,690	23,353	561,597
SWEET LAKE:													
Daily average	1,144	1,329	1,099	934	1,331	1,764	1,661	1,499	1,339	1,173	1,076	1,013	
Month	35,453	37,212	34,057	28,013	42,809	52,928	51,493	46,468	40,154	36,333	32,285	31,413	468,618
VINTON:													
Daily average	5,734	5,851	6,640	6,017	5,243	5,600	5,475	5,077	5,224	5,329	4,939	4,917	
Month	177,762	163,828	205,842	180,511	162,531	168,006	169,722	157,392	156,727	165,201	148,169	152,429	2,008,121
WELSH:													
Daily average	89	77	24	.....	.....	2	.....	4	4	4	4	2	
Month	2,771	2,156	756	.....	.....	60	.....	124	130	140	118	67	6,322
WHITE CASTLE:													
Daily average	991	943	997	1,317	1,651	736	762	820	770	713	637	561	
Month	30,733	26,404	30,908	39,509	51,191	22,086	23,623	25,419	23,104	22,100	19,111	17,399	331,587
Daily average	27,767	26,851	26,272	27,923	32,692	25,458	22,109	23,420	25,157	29,752	32,452	32,746	27,723
Month	860,782	751,828	814,446	837,691	1,013,462	763,731	685,382	726,012	754,704	922,325	973,577	1,015,130	10,119,968
Total Gulf Coast: Daily average	180,592	172,739	169,393	178,497	177,410	162,709	151,101	145,144	142,280	145,141	151,541	147,523	160,255
Month	5,598,347	4,836,692	5,081,815	5,354,911	5,499,710	4,881,273	4,684,148	4,499,463	4,268,397	4,499,371	4,546,265	4,573,216	58,492,995
Total 1930	5,581,489	5,619,270	6,105,265	5,980,067	6,181,740	6,214,648	6,320,149	6,214,893	5,824,543	5,800,475	5,415,591	5,642,394	71,200,514
Total 1929	4,344,223	3,959,612	4,586,507	4,705,904	4,673,923	4,484,434	4,749,161	4,956,782	5,007,570	5,486,792	5,591,438	5,554,487	58,101,845
Total 1928	3,796,556	3,652,290	3,796,516	3,760,252	4,155,544	4,114,796	4,378,872	4,188,943	3,948,578	3,842,655	3,996,644	4,200,073	47,868,342
Total 1927	5,232,366	4,409,580	4,837,581	4,420,560	4,762,127	4,612,620	4,432,535	4,301,901	4,258,890	4,379,432	4,176,450	4,350,044	54,174,086
Total 1926	3,023,877	2,820,608	3,034,683	2,842,050	3,208,721	2,849,970	3,785,069	5,237,019	5,655,960	5,433,029	5,285,730	5,570,607	48,806,575

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to less than 500 bbls. daily. Because of the previous small production, Markham never had had a pipe line outlet other than a small line, owned by the Texas Pipe Line Co., from the field to a loading rack at Bay City. Since completion of the well, however, the pipe line company has laid a 6-inch line from the field to West Columbia, a distance of about 25 miles, where it ties into the West Columbia-Houston main line, and the well has been producing steadily from 1,200 to 1,500 bbls. daily without trace of water. This well was followed by the drilling of another (Laughlin and associates' No. 1 W. H. Gray) on the north flank of the dome and about three-quarters of a mile to the west of the Hamill producer. This found sand at 3,245-59 feet and was completed for a producer. Offsetting the Hamill well to the north, Powers Production Co.'s No. 1 Meyers was completed in the same sand at 3,361-76 feet for a 500-bbl. well, but this production has steadily increased.

Gulf Refining Co. found the first flank production on its Sorrento Dome, Ascension Parish, in No. 19 United Land Co., located on the northeast side. This well, one of a series of deep flank tests which had been drilled around the sides of the dome, came in flowing 300 bbls. daily from sand at 4,345-51 feet after being plugged back from salt at 4,848-70 feet. This company's No. 20 United, 200 feet north and 400 feet west of No. 19, however, failed to get the sand and, drilling into cap at 4,909-44 feet, was abandoned. Previous production had been in the caprock on top of the dome around 1,650-1,700 feet, in which four wells had been completed. With the exception of the first well, completed in February, 1928, the development has been more or less disappointing. At present, no rigs are running.

Deep Sand Discovery

A new deep sand, the second deepest producing sand on the Gulf Coast, was found at Sweet Lake, Cameron Parish. Only one well, No. 10 Yount Lee Oil Co., has been completed in it, but this well has been an exceptionally prolific and consistent producer. In this well the sand is at 7,366-7,387 feet, and only at Jennings, where three 7,400-7,500-foot wells have been completed is the Sweet Lake production depth exceeded. For several months following completion of No. 10, operations in the field were suspended because of general market conditions, but lately an old well in a sand at 5,562-5,660 feet has been deepened to find the new deep sand and at latest reports was drilling around 7,400 feet showing oil. Sweet Lake has been a field of deep sands. The discovery well, No. 3, was completed at a depth of 5,897 feet, then the deepest producing well on the coast.

At Moss Bluff, Liberty County, Texas Gulf Sulphur Co., in drilling a series of shallow cap rock tests in exploration for sulphur, made a small producer in one, No. 3 Harrison. This hole was drilled to a total depth of 824 feet but finally was completed only after plugging to 798 feet and perforating casing to 787 feet. However, there was considerable sulphur water along with the oil and the well has not been of particular commercial value, and no additional wells have been drilled. Four deep wells, located in flank sands on the east side of the dome, have been completed at Moss Bluff, these being brought in during 1930, but deep sand development since then has been unsuccessful with a series of dry holes being drilled, not only around the producers but on other sides of the dome.

Deep Discovery at Lockport

At Lockport, Calcasieu Parish, Louisiana, the development of deep sands in a new extension a mile northwest of the main Lockport Field, created considerable interest during the early part of the year and resulted in the building up of a substantial daily production for the district, but, as in many other fields, generally unfavorable conditions in the industry resulted in a gradual suspension of operations there.

The shallow gas sand of Raccoon Bend, Austin County, was extended about three-quarters of a mile west early in the year with the completion of H. R. Flannigan's No. 1 Dietrick as good for 30,000,000 feet of gas at 976 feet. A second test there, located 75 feet northeast of No. 1, passed this, however, and was drilled to a total depth of 3,850 feet and was abandoned as dry.

A new deep sand also was found at High Island, Galveston County, where Gulf Production Co.'s No. 10 Smith blew in from sand at 5,911 feet flowing 2,500 to 3,000 bbls. daily. This test had been drilled to 6,018 feet but with drill stem stuck it was plugged back to the sand. The former deepest sand was at 5,055 feet.

High Island figured in one of the biggest transactions which has taken place on the Gulf Coast in several years, and in which Yount Lee Oil Co. of Beaumont, Tex., acquired control of virtually all the field and surrounding acreage from Marrs McLean and the Gulf Production, who previously had been the chief operators there. All told, Yount Lee Oil Co. paid $425,000 actual cash with an additional $400,000 note due in a year from the date of purchase, and $2,300,000 to be paid out of an eighth of the first oil produced with an additional overriding royalty. This involved about 1,700 acres with 12 producing wells, together with field equipment.

Since acquisition of the dome, Yount Lee Oil Co. has carried on a steady development, adding several good wells. It also has laid a 10-inch pipe line from the field to the company's tank farm and terminal at Beaumont, a distance of approximately 45 miles. Although the dome has been one of the older producing fields on the Coast it never has had a pipe line outlet until now.

At Blue Ridge, a group headed by O. L. Seagraves and Nat Hunter, acquired approximately 3,500 acres on the north side of Blue Ridge, Fort Bend County, from Bassett Blakely. Most of the acreage formerly had been held by the Gulf Production Co. but this company dropped it except 5 acres around each producing well. Two wells have been completed on the block by the new owners, extending production further eastward around the north flank.

OVERSUPPLY AND LOW PRICES KEEP DOWN EASTERN DRILLING

By Leon H. Walter

Conservation and curtailment, coupled with low crude prices, brought drilling operations in the Eastern Field to a low mark in 1931 with all districts producing Pennsylvania grade crude showing fewer completions and less production. The only district in the Eastern Field to show a gain in drilling operations during the year 1931 was the Tioga-Wayne gas field, which was discovered late in 1930 and where development did not begin on a large scale until 1931. Over 200 wells were drilled in this field during the year with not a single oil producer and 122 gas wells.

Eastern Field completions during 1931 numbered 1,726, counting the 204 completions in the Tioga-Wayne gas field, leaving 1,500 wells drilled for oil. Daily initial production added during 1931 was a mere 4,111 bbls., with 316 of the new wells dry holes and 679 of them gas wells. In 1930 there were 3,874 wells drilled in the Eastern Field with an initial production of 20,442 bbls., 438 dry holes and 667 gas wells. In 1929 there were 5,887 completions in the Eastern Field with initial production of 27,220 bbls., 452 dry holes and 702 gas wells.

Notable curtailment of drilling took place in all the divisions of the Eastern Field with operations in the Bradford-Allegany district being held to a minimum for a greater part of the year. In October operation of the five-spot method was again started in these districts on a large scale with a resultant increase in the number of Eastern Field completions. All other districts continued to curtail operations to a minimum with Pennsylvania crude selling well below the $2 a barrel mark.

Eastern Field drilling during 1931 was confined principally to tested fields with little prospecting for new territory and no new pools discovered. The year was one of the quietest in history in point of drilling operations and development of oil holdings.

The lowest price for Pennsylvania grade crude during the past year carries the industry back to price levels of more than 15 years ago, and the average price for the year an even greater period. While stocks of crude held in the various pipe line companies engaged in transporting Pennsylvania grade crude are considerably below the figures at the close of 1930, there is at present a reduction in demand for crude and to offset that a 10 per cent curtailment in effect. With the balancing of production by curtailment to meet the demand, none of the eastern pipe lines were forced to declare an embargo during the year, and but for that curtailment a gentleman's agreement effected by the Crude Oil Conservation Board of the Pennsylvania Producers Association, more disastrous crumbling of the price structure was imminent.

Gas

With 517 gas wells completed in the three districts of the lower Eastern fields, 88 less than in 1930, and with most of the new work at the end of the year being carried on in proven gas areas, this phase of the industry did not suffer as badly as the oil. Yet due to lack of proper markets, due to the low rate of mill operations and a most unusually mild winter, a greater part of the new gas completions are shut in, along with a still greater volume of gas from old wells. This has been reflected in the earnings of some of the large gas utilities.

Wildcatting

The most unusual wildcat in the East is the test of the United Fuel Gas Co. on the J. W. Hinzman farm in Curtis district, Roane County, West Virginia, which though not completed draws its interest from the fact that it stands as the deepest test in the East. The hole is now 8,850 feet deep and still drilling. Another uncompleted wildcat is in Morgan district, Monongalia County, West Virginia, and is the test of S. W. Meals and others on the George S. Davidson farm. It is now drilling at about 2,500 feet.

In southwest Pennsylvania, the American Natural Gas Co. is still testing the regions around their discovery well on the O. S. Miller farm in Quemahoning Township, Somerset County, 15 to 20 miles from any production and just west of the Negro Mountain Anticline. The discovery well is rated good for 750,000 feet a day, and was brought in in 1930. Last year, about a half mile to the northeast, a test was completed in the same formation on the W. H. Miller farm, which is gauged as good for 1,500,000 feet a day, from a depth of 2,650 feet. A half mile further northeast and on the Irvin Maust farm, the same operators completed a test which appeared off the line of strike as it is now showing for only 35,000 feet a day. Still farther to the northeast and on the Robert Herwig farm, the same operators are still drilling a test which, though in the sand, has but a very light showing of gas, and unless something is found a few feet deeper, the test will be plugged and abandoned. On the eight wells drilled within a 3½-mile radius of the discovery well, three are producers and five are dry.

The year 1931 added another important wildcat, that of the Dunn Mar Oil Co. jointly with the Consumers Fuel Co. on the Anna Grimm farm in Bullskin Township, Fayette County, miles from production. It lies on the west flank of the arch of the Chestnut Ridge anticline, a section until this year untested. All the sands were found from the Lime to the Elk, and all were dry. There was one small puff of gas and a slight greasiness in the Injun sand, but the Gas, Murraysville, Speechley, Tiona, Kane, Bradford and Warren sands were consistently dry and in many cases very much thinned out.

The following table shows the completions by fields for 1931:

EASTERN FIELD

Summary of Completed Wells in 1931

Field—	Comp.	Prod.	Dry	Gas
Allegany	106	315	4	1
Bradford	276	485	0	0
Venango-Clarion	83	72	11	28
Middle Field	36	65	0	0
Butler-Armstrong	32	22	8	11
Tioga-Wayne	204	0	82	122
S. W. Pennsylvania	100	212	26	48
S. E. Ohio	354	2,622	102	90
West Virginia	535	318	83	379
Total, 1931	1,726	4,111	316	679
Total, 1930	3,874	20,422	438	667
Difference	2,148	16,331	122	12

GULF COAST

Summary of Completed Wells in 1931

Texas

Field—	Comp.	Prod.	Abd	Gas
Allen	5	.....	5	0
Barbers Hill	81	67,307	13	0
Batson	6	57	6	0
Big Creek	3	750	2	0
Blue Ridge	6	2,285	1	0
Boling	3	4	2	0
Brenham	1	.....	1	0
Clay Creek	14	1,975	5	0
Damon Mound	4	1,910	0	0
Esperson	10	1,579	3	0
Fannett	1	....	1	0
Goose Creek	2	160	1	0
Hankamer	6	3,745	2	0
High Island	7	4,694	2	0
Hull	16	2,365	4	1
Humble	34	1,972	19	1
Liberty	1	....	1	0
Lost Lake	2	....	2	0
Markham	3	1,200	0	0
Moss Bluff	27	750	24	0
Mykawa	6	780	3	0
Nash	3	1,700	1	0
North Dayton	9	3,000	5	0
Orange	6	670	2	0
Orchard	5	2,320	1	0
Pierce Junction	36	16,022	7	0
Raccoon Bend	14	2,382	5	2
Refugio	88	21,516	25	7
Saratoga	18	523	0	0
Spindletop	14	4,036	4	0
Thompson	10	14,341	0	0
West Columbia	1	....	1	0
Miscellaneous	102	4,605	88	11
Total 1931	544	162,638	230	22
Total 1930	1,065	370,441	336	43
Difference	521	207,803	106	21

Louisiana

Bayou Blue	6	195	5	0
Bayou Boullion	2	....	2	0
Black Bayou	7	530	6	0
Edgerly	6	410	3	0
Hackberry	18	19,653	3	0
Jennings	10	635	2	0
Lake Barre	8	7,580	2	0
Lake Pelto	2	50	1	0
Leesville	3	3,150	0	0
Lockport	18	8,474	2	3
Port Barre	3	350	2	0
Sorrento	2	300	1	0
Starks	4	665	0	0
Sulphur	7	4,454	3	0
Sweet Lake	4	1,650	2	0
Vinton	19	7,675	5	0
Welsh	2	10	1	0
White Castle	1	....	1	0
Miscellaneous	65	4,125	58	1
Total 1931	187	59,906	99	3
Total 1930	296	104,588	161	1
Difference	109	44,682	62	2
Total Gulf Coast	731	222,544	329	25
Total 1930	1,361	475,029	497	44
Difference	630	252,485	168	19

COMPLETIONS BY MONTHS

Month—	Comp.	Prod.	Abd	Gas
January	92	28,808	32	4
February	94	18,853	42	5
March	90	15,621	42	4
April	80	25,863	36	0
May	81	25,515	41	1
June	69	14,337	31	3
July	48	5,362	29	3
August	38	13,960	21	0
September	27	8,396	17	2
October	33	19,483	9	1
November	45	25,170	17	0
December	34	21,176	12	2
Total 1931	731	222,544	329	25

Two New Prospects

Wildcatting on the Coast also proved two additional geophysical prospects as being actual salt domes. The first was Venice, Plaquemines Parish, in the extreme southeastern tip of Louisiana. This dome, sometimes known as Rose or Spanish Pass, is owned by the Gulf Refining Co. This company's No. 2 Buras Levee Board, Section 27-21s-30e, topped cap rock at 2,216 feet and drilled to 2,356 feet. This cap showed oil at 2,216-36 feet but on a test flowed mostly sul-

(Continued on Page 104)

Important Oil Discoveries in Kansas

The Ellsworth-Barton Arch Area in Five Counties Develops Numerous Pools at Wide Intervals. Gas Fields Extended

By W. A. Spinney

Wildcatting in Kansas in 1931 uncovered a number of important oil pools and gas reservoirs in central and western counties, and operators in pools that had been opened previously to 1931 extended them to an extent that stamps them as major producing areas for future development.

As a general rule, field work fell off greatly in the State because of national overproduction of crude oil and consequent low prices, and production was curtailed throughout the year in line with pipe line demand. Kansas at the close of the year could easily have produced 200,000 bbls. a day but production was kept down to as close to the 100,000-bbl. mark as possible. Kansas is the oldest producing region in the Mid-Continent Field and it is noteworthy that after all its years of development work it has not yet reached its ultimate peak in production, and there is a vast area that gives promise of more oil and more natural gas.

The finding of oil in more than a score of wildcats along what is called the Ellsworth or Barton arch in Russell, Rice, Stafford, Barton and Ellsworth Counties, was one of the important features of the year, and indicates that a large producing area has been uncovered. The majority of these wells were shut in during the year and only a few were given a production gauge owing to the lack of market outlet. In the area one pool with 12 producing wells was developed and the wells were allowed to produce a small percentage of their potential from October on to the close of the year.

Developing Ritz-Canton

The Ritz-Canton-Decker Pool, in McPherson County, was developed during the year. Approximately 120 wells were completed in the pool. A deep pay was discovered in the Ritz-Canton Pool, in March, which stimulated the drilling of additional wells. The deep pay giving the area added importance as the production previously was found in chat.

Conservation Law

One of the important events was the adoption of a conservation law which was signed by Governor Woodring, in May, 1931, placing the administration of production curtailment in the hands of the Kansas Public Service Commission. The law was suggested at a general meeting of operators held in January to consider statewide proration. Previous to the enactment of the law only one pool, the Voshell, in the State was under proration and it was voluntary, the outlet being limited to the pipe line capacity.

Oil in the Ritz-Canton Pool was being produced under a unit plan during the first half of the year. The plan divided the field into 40-acre units for the purpose of allocating production. If more than one well was drilled on 40 acres, the potential production for the unit was unchanged. The unit potentials were allocated according to the pipe line outlet.

A committee of oil operators was named to act in an advisory capacity in the administration of the proration law. The Public Service Commission in issuing orders was careful not to disturb the oil industry in the State. It lent a helping hand when operators were unable to agree on conservation measures. The oil operators were permitted to work out their own problems wherever possible.

Ellsworth Arch in Limelight

The most important development in Kansas in 1931, was the Ellsworth arch. Wildcat drilling had been going on in that part of the State for two years in several counties along what is called the Barton or Ellsworth arch, located in Stafford, Barton, Rice and Ellsworth Counties.

The geology of this region was covered in an article by H. W. McClelland, in The Oil and Gas Journal, October 23, 1930. It is generally believed that the Barton arch lies over the Ellsworth arch. The Barton arch extending in a northwest-southeast direction, and the Ellsworth arch having a general direction north and south. It is believed the earlier folding of the area caused the formation of the Ellsworth arch and later earth movements with forces coming from another direction caused the upper or Barton arch to be formed.

More than a dozen widely scattered tests found oil production the last two years and in one pool 12 producing wells were drilled. These producing areas are located in the east central part of Stafford County, southeastern and northeastern Barton County, western Rice County, southwestern Ellsworth County, and southeastern Rush County. The area in which the producing wells lie is approxi-

KANSAS

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
SEDGWICK COUNTY:													
Wright—													
Daily average	8,085	8,205	7,684	7,051	6,782	6,593	5,411	5,444	5,331	5,010	4,622	4,616	
Month	250,635	229,740	238,204	211,530	210,242	197,790	167,741	168,764	159,930	155,310	138,660	143,096	2,271,642
Greenwich—													
Daily average	2,371	3,662	3,620	3,233	3,030	2,988	3,395	3,411	3,234	2,419	2,700	2,670	
Month	73,501	102,536	112,220	96,990	93,930	89,640	105,245	105,741	97,020	74,989	81,000	82,770	1,115,582
Robbins—													
Daily average	278	339	306	270	274	276	228	254	260	246	212	263	
Month	8,618	9,492	9,486	8,100	8,494	8,280	7,068	7,874	7,800	7,626	6,360	8,153	97,351
Eastborough—													
Daily average	7,904	8,020	7,163	6,349	5,472	5,460	4,170	5,197	5,437	5,682	5,492	7,717	
Month	245,024	224,560	222,053	190,470	169,632	163,800	129,270	161,107	163,110	176,142	164,760	239,227	2,249,155
Miscellaneous—													
Daily average	310	282	291	325	272	262	257	236	396	422	198	250	
Month	9,610	7,896	9,021	9,750	8,432	7,860	7,967	7,316	11,880	13,082	5,940	7,750	106,504
MARION COUNTY:													
Florence-Urschel—													
Daily average	240	246	217	224	218	219	125	129	162	156	144	127	
Month	7,440	6,888	6,727	6,720	6,758	6,570	3,875	3,999	4,860	4,836	4,320	4,247	70,240
Peabody—													
Daily average	228	241	477	635	544	511	262	236	255	400	308	297	
Month	7,068	6,748	14,787	19,050	16,864	15,330	8,122	7,316	7,650	12,400	9,240	9,207	133,782
Covert-Sellers—													
Daily average	421	411	593	604	572	601	514	483	455	416	429	404	
Month	13,051	11,508	18,383	18,120	17,732	18,030	15,934	14,973	13,650	12,896	12,870	12,524	179,671
Lost Springs—													
Daily average	996	910	829	782	741	753	708	701	694	670	619	599	
Month	30,876	25,480	25,699	23,460	22,971	22,590	21,948	21,731	20,820	20,770	18,570	18,569	273,484
Davis—													
Daily average	567	702	639	629	652	626	605	585	567	557	520	502	
Month	17,577	19,656	19,809	18,870	20,212	18,780	18,755	18,135	17,010	17,267	15,600	15,562	217,233
BUTLER COUNTY:													
Elbing—													
Daily average	1,462	1,260	1,494	1,762	1,768	1,688	1,678	1,629	1,632	1,654	1,612	1,570	
Month	45,322	35,280	46,314	52,860	54,808	50,640	52,018	50,499	48,960	51,274	48,360	48,670	585,005
Potwin—													
Daily average	360	277	341	375	338	333	327	319	324	325	301	291	
Month	11,160	7,756	10,571	11,250	10,478	9,990	10,137	9,889	9,720	10,075	9,030	9,021	119,077
South Augusta—													
Daily average	932	915	1,015	946	887	890	822	875	869	795	855	826	
Month	30,442	25,620	31,465	28,380	27,497	26,700	25,482	27,125	26,070	24,645	25,650	25,606	324,682
North Augusta—													
Daily average	1,354	1,269	1,243	1,210	1,136	1,142	1,111	1,098	984	975	911	889	
Month	41,974	35,532	38,533	36,300	35,216	34,260	34,441	34,038	29,520	30,225	27,330	27,559	404,928
Towanda—													
Daily average	1,727	1,597	1,631	1,762	1,705	1,667	1,576	1,549	1,499	1,513	1,410	1,402	
Month	53,537	44,716	50,561	52,860	52,855	50,010	48,856	48,019	44,970	46,903	42,300	43,493	579,080
Cameron-Robinson—													
Daily average	663	967	785	766	696	703	559	572	545	534	517	508	
Month	20,553	27,076	24,335	22,980	21,576	21,090	17,329	17,732	16,350	16,554	15,510	15,748	236,833
Sluss—													
Daily average	194	190	191	199	200	192	140	131	123	140	148	139	
Month	6,014	5,320	5,921	5,970	6,200	5,760	4,340	4,061	3,690	4,340	4,440	4,309	60,365
Nuttle-Koogler—													
Daily average	2,713	2,516	2,650	2,638	2,735	2,656	2,665	2,508	2,358	2,349	2,252	2,179	
Month	84,103	70,448	82,150	79,140	84,785	79,680	82,615	77,748	70,740	72,819	67,560	67,549	919,337
Wilson-Dunkle—													
Daily average	1,463	1,345	1,440	1,378	1,405	1,383	1,343	1,321	1,286	1,332	1,245	1,216	
Month	45,353	37,660	44,640	41,340	43,555	41,490	41,633	40,951	38,580	41,292	37,350	37,696	491,540
Eldorado—													
Daily average	6,442	6,092	6,296	6,097	6,105	6,111	6,351	5,859	5,670	6,480	6,210	6,060	
Month	199,702	170,576	195,176	182,910	189,255	183,330	196,881	181,629	170,100	200,880	186,300	187,860	2,244,599
Smock—													
Daily average	204	180	176	175	183	178	168	156	172	159	158	157	
Month	6,324	5,040	5,456	5,250	5,673	5,340	5,208	4,836	5,160	4,929	4,740	4,867	62,823
Leon-Weaver—													
Daily average	3,760	3,342	3,287	3,377	3,180	3,169	2,660	2,427	2,763	2,771	2,766	2,689	
Month	116,560	93,576	101,897	101,310	98,580	95,070	82,460	75,237	82,890	85,901	82,980	83,359	1,099,320
Fox-Bush—													
Daily average	827	861	771	782	733	712	755	806	813	811	790	768	
Month	25,637	24,108	23,901	23,460	22,723	21,360	23,405	24,986	24,390	25,141	23,700	23,808	286,619
Douglass—													
Daily average	97	97	97	95	96	93	97	96	97	92	97	93	
Month	3,007	2,716	3,007	2,850	2,976	2,790	3,007	2,976	2,910	2,852	2,910	2,883	34,884

(Table continued on next page)

mately 50 miles east and west and 70 miles north and south.

The discovery well on the Ellsworth or Barton arch was Steinbuckle and others' No. 1 Schurr, NE cor. SW, Section 21-20-10w, Rice County, which made 202 bbls. of oil from sand at 3,275-84 feet. It was completed in October, 1929. The well and acreage was later sold to Slick, Pryor and Lockhart and was drilled deeper to the Siliceous lime at 3,304-08 feet, where it made 860 bbls. of oil in August, 1929.

Discoveries completed in 1931 include the following wells: L. E. Cress and others' No. 1 Sharpe, SE cor. NE, Section 13-20-10w, Rice County, estimated at 1,500 to 2,000 bbls. a day from the Siliceous lime at 3,318-38 feet. It was completed in April, 1931. Prairie Oil & Gas Co.'s No. 1 Davidson, NW cor. SE, Section 4-16-11w, Barton County, made 200 bbls. of oil a day from the Siliceous lime at 3,316-39 feet. It was also completed in April, 1931.

J. A. Alyard and others' No. 1 Stratman, SW cor. NW SE, Section 1-17-10w, Ellsworth County, was estimated at 2,400 bbls. a day from the Siliceous lime at 3,255-71 feet. It was also completed in April.

T. Palmer and Gypsy Oil Co.'s No. 1 Stoltenberg, C SW SW, Section 22-16-10w, Ellsworth County, made 100 bbls. of oil in one hour and was then shut in. The Siliceous lime was found at 3,333-47 feet. It was completed in July, 1931.

Dewey and Mitchell's No. 1 Greenwalt, C SW SW, Section 17-19-16w, Rush County, was completed in September. It was estimated at 150 bbls. a day from the Siliceous lime at 3,825-40 feet.

Hiligoss and others' No. 1 Isern, SW cor. SE NE, Section 12-20-11w, Barton County, made approximately 500 bbls. a day from the Siliceous lime at 3,313-29 feet, and was completed in December.

None of the pools was fully developed and most of them remained one-well pools throughout the remainder of the year.

First Hunton Lime Producer

The discovery of Hunton lime as a producer of oil in Kansas was made in Frank Hollow and others' No. 1 Church Acre, SW cor., Section 20-22-3w, Harvey County, which flowed and swabbed 25 bbls. of oil an hour from the Hunton lime at 3,507-11 feet. The well is estimated at 500 bbls. a day. The well is located on a 1-acre tract and the offsets are owned by the Mid-Kansas Oil & Gas Co., Shell Petroleum Corp., W. C. McBride, Inc., and Stanolind Oil & Gas Co. The well is located about 7 miles south of the Voshell Pool, in McPherson County.

Ritz-Canton-Decker Pool

The Ritz-Canton-Decker Field of McPherson County stepped into prominence just as the Voshell Pool, in the same county was declining. The Ritz-Canton Field soon developed the largest potential production of any pool in the State. In January the potential production was 35,578 bbls. a day from 23 completed wells. This was increased to an estimated peak of 125,000 bbls. a day in August. The potential gas production of the Decker gas field increased to 900,000,000 feet a day in August from 51 wells.

The activity started during January and continued at a steady rate every month in the year. The oil production in the Ritz-Canton Field was found in chat and in the Viola lime. The first wells in the field found oil in chat and later a large number of these wells were drilled deeper to the Viola lime. If a test missed the chat producing formation it was drilled deeper to the Viola lime.

The Decker gas field developed into the State's largest producing gas field, having a greater open flow of gas than the Hugoton Field in the southwestern part of the State. The Decker gas area adjoined the Ritz-Canton Field on the northwest, the eastern edge of that field was developed to within a mile of the oil area of the Ritz-Canton Field. The first of the year the Decker gas field had a potential open flow of 250,000,000 feet of gas a day which was increased to 950,000,000 feet with the field not yet fully developed. Wells completed in the area ranged from 1,000,000 feet a day to 55,000,000 feet a day.

The discovery well was drilled by the Shell Petroleum Corp. on the Ritz farm in Section 1-20-2w. It blew in as a well June 30, 1929, with a large flow of oil and gas from the chat and was estimated at 5,000 bbls. a day, however, there were no facilities to handle the unexpected flow of oil and it was shut in.

The development of the field has been orderly and slow and the production was prorated. The producing area gradually spread to the north and northeast until it extends in some cases 8 miles wide and 10 miles long. The deep producing formation, or Viola lime, was discovered 2 miles north of the first well which found production in the chat. At the end of the year it was estimated that the Ritz-Canton-Decker Field had approximately 1,100 proven locations yet to drill.

State's Largest Well

The State's largest well was completed in the Ritz-Canton Field, it was the Stanolind Oil & Gas Co.'s No. 4 Flood, NW cor., Section 6-20-2w. It flowed 6,832 bbls. of oil in 24 hours from the chat at 2,927-69 feet. It is located on the west side of the field and indicates the west side of the area may prove to be the most prolific area in the field.

Sedgwick County

Sedgwick County was quiet with the exception of the Eastborough Pool, where a deep pay horizon was developed. During the first half of the year the deep pay was extended to the south by the completion of the thirty-fourth well in the field. The test was Fisher & Lauck's No. 2 Schaffer, a twin in the NE cor. SE NW, Section 30-27-2. The oil was found at 3,256-57 feet, where the well made 600 bbls. a day. It was again extended in August, by the Magnolia Petroleum Co.'s No. 5 Wheeler, located in approximately SW cor. NE NE, Section 19-27-2, which was an old chat producing well drilled deeper to 3,255-59 feet, where it made 922 bbls. of oil the first 24 hours.

Another one of Sedgwick County's early pools, the Goodrich Pool, which found its production in the chat now has wells producing from the Viola lime horizon. Continental Oil Co.'s No. 1 Black, SW cor. SE NE, Section 16-25-1, swabbed 300 bbls. of oil in 24 hours

KANSAS (Continued)

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
Keighly—													
Daily average	407	444	410	424	392	388	370	317	373	328	347	331	
Month	12,617	12,432	12,710	12,720	12,152	11,640	11,470	9,827	11,190	10,168	10,410	10,261	137,597
Benton—													
Daily average	63	60	71	65	61	62	51	48	52	47	46	44	
Month	1,953	1,680	2,201	1,950	1,891	1,860	1,581	1,488	1,560	1,457	1,380	1,364	20,365
Blankenship—													
Daily average	466	544	441	516	451	471	443	407	428	394	393	376	
Month	14,446	15,232	13,671	15,480	13,981	14,130	13,733	12,617	12,840	12,214	11,790	11,656	161,790
GREENWOOD AND WOODSON COUNTIES:													
Sallyards—													
Daily average	722	750	870	960	936	911	811	694	735	763	781	769	
Month	22,382	21,000	30,070	28,800	29,016	27,330	25,141	21,514	22,050	23,653	23,430	23,839	298,225
Teeter—													
Daily average	3,279	3,349	3,366	3,322	3,311	3,286	3,075	2,685	2,872	2,970	2,997	2,901	
Month	101,649	93,772	104,346	99,660	102,641	98,580	95,325	83,235	86,160	92,070	89,910	89,931	1,137,279
Virgil—													
Daily average	4,488	4,749	4,552	4,297	4,342	4,320	3,617	3,733	3,980	3,784	3,725	3,614	
Month	139,128	132,972	141,112	128,910	134,602	129,600	112,127	115,723	119,400	117,304	111,750	112,034	1,494,662
Thrall-Burkett—													
Daily average	974	1,040	937	991	996	881	819	757	835	810	801	749	
Month	30,194	29,120	29,047	29,730	30,876	29,430	25,389	23,467	25,050	25,110	24,030	23,219	324,662
Seeley—													
Daily average	6,104	5,748	5,322	5,248	4,973	4,965	4,460	4,564	4,493	4,830	4,469	4,382	
Month	189,224	160,944	164,982	157,380	154,163	148,950	138,260	141,484	134,790	149,730	134,070	135,842	1,809,819
Polhamus—													
Daily average	612	705	657	695	645	647	587	508	550	553	547	511	
Month	18,972	19,740	20,367	20,850	19,995	19,410	18,197	15,748	16,500	17,143	16,410	15,841	219,173
Miscellaneous—													
Daily average	887	902	889	835	797	782	722	667	673	715	696	667	
Month	27,497	25,256	27,559	25,050	24,707	23,460	22,382	20,677	20,190	22,165	20,880	20,677	280,560
COWLEY COUNTY:													
Rainbow Bend—													
Daily average	1,544	1,512	1,520	1,535	1,467	1,411	1,338	1,358	1,360	1,377	1,334	1,291	
Month	47,864	42,336	47,120	46,050	45,477	42,330	41,478	42,098	40,800	42,687	40,020	40,021	518,281
Slick—													
Daily average	391	404	404	412	402	404	386	377	397	371	340	317	
Month	12,121	11,312	12,524	12,360	12,462	12,120	11,966	11,687	11,910	11,501	10,200	9,827	139,990
Graham—													
Daily average	273	275	256	254	235	227	222	235	241	195	193	184	
Month	8,463	7,700	7,936	7,620	7,285	6,810	6,882	7,285	7,230	6,045	5,790	5,704	84,750
Rock—													
Daily average	126	123	130	138	128	126	120	107	118	101	131	117	
Month	3,906	3,444	4,030	4,140	3,968	3,780	3,720	3,317	3,540	3,131	3,930	3,627	44,533
Clark—													
Daily average	161	157	97	162	155	149	149	145	137	142	141	133	
Month	4,991	4,396	3,007	4,860	4,805	4,470	4,619	4,495	4,110	4,402	4,230	4,123	52,508
Eastman—													
Daily average	322	352	310	359	348	334	331	332	373	314	329	302	
Month	9,982	9,856	9,610	10,770	10,788	10,020	10,261	10,292	11,190	9,734	9,870	9,362	121,735
Winfield-New Salem—													
Daily average	1,704	1,757	1,898	1,873	1,828	1,810	1,698	1,666	1,601	1,763	1,710	1,616	
Month	52,824	49,196	58,838	56,190	56,668	54,300	52,638	51,646	48,030	54,808	51,300	50,096	636,534
Miscellaneous—													
Daily average	809	811	820	866	835	827	537	601	795	854	822	760	
Month	25,079	22,708	25,420	25,980	25,885	24,810	19,747	18,631	23,850	26,474	24,660	23,560	286,804
McPHERSON COUNTY:													
Ritz-Canton—													
Daily average	5,951	6,517	6,142	6,386	5,657	5,772	7,028	10,797	15,642	13,940	16,422	16,417	
Month	184,481	182,476	190,402	191,580	175,367	173,160	217,868	334,707	469,260	432,140	492,660	508,927	3,553,028
Voshell—													
Daily average	16,853	21,611	18,439	16,650	17,832	16,770	15,429	14,382	12,591	11,655	10,292	10,316	
Month	522,443	605,108	571,609	499,500	552,792	503,100	478,299	445,842	377,730	361,305	308,760	319,796	5,546,284
Miscellaneous—													
Daily average	426	149	142	183	156	149	637	601	85	75	80	92	
Month	13,206	4,172	4,402	5,490	4,836	4,470	19,747	18,631	2,550	2,325	2,400	2,852	85,081
OTHER COUNTIES:													
Trego—													
Daily average	4	4	3	3	.....	.....	2	2	2	2	2	.....	
Month	124	112	93	90	.....	.....	62	62	60	62	60	.....	725
Rooks—													
Daily average	300	307	180	173	181	177	159	114	149	134	123	124	
Month	9,300	8,596	5,580	5,190	5,611	5,310	4,929	3,534	4,470	4,154	3,690	3,844	64,208
Sumner—													
Daily average	8,009	7,845	7,249	7,304	7,224	7,202	6,814	6,347	5,735	4,684	4,897	4,014	
Month	248,279	219,660	224,719	219,120	223,944	216,060	211,234	196,757	172,050	145,204	146,910	124,434	2,348,371

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from 3,334-37 feet. It was the first Viola lime well and was completed in September. The same company immediately started several other tests to the deep pay horizon. The well was located about a half mile north of other chat producing wells in the field.

Cheyenne Bottoms Surveyed

Following an extensive seismograph survey of the Cheyenne Bottoms in Barton County, more than 75 per cent of the acreage was leased by major oil companies. The area is located about 10 miles from the nearest producing well. Amerada Petroleum Corp. and Atlantic Oil Producing Co. were the most extensive lease buyers.

Wildcats in Gove County

Two tests were completed in Gove County which found oil showings, but both were abandoned as failures. The first test completed was Boucher Oil Co. and Valerius' No. 1 Todd, NW cor. Section 24-13-27w, which found a showing of oil in the upper formations and was abandoned at 4,813 feet. The other test was Atlantic Oil Producing Co. and T. C. Johnson's No. 1 Wright, SE cor. NE Section 11-12-27w, which showed water at 4,625 feet and was drilled to a total depth of 4,861 feet and plugged.

Rooks County Favorable

One of the promising areas in the western part of the State is Rooks County, which may develop into an active region when conditions return to normal. The first producing well in the county was Seeley, Boyson and Aylward's No. 1 Silvers, in Section 21-8-19w, which was completed in 1930, but was shut in without any outlet after it completed a swabbing test making 350 bbls. of oil a day. It was given a pipe line outlet in February, 1931, the owners completing a 4-inch pipe line from the well to a loading rack at Zurich, and the oil was shipped out in tank cars. It was the only well completed in the county during the year. It was averatging around 140 bbls. of oil when it was pumped.

Schurr Pool Restricted

The Public Service Commission after a hearing in September ordered all the wells in the Schurr Pool in Rice County shut in, stating if the wells were allowed to produce at that time it might serve as a serious obstacle to the adoption of a general curtailment plan. The commission later withdrew its ruling and permitted the wells to produce at the rate of 100 bbls. a day each. Tests gave the Schurr Pool a potential of 10,761 bbls. a day from 12 wells.

State's Deep Test

The deepest test completed in the State during the year was in Clark County. The Watchorn Oil & Gas Co.'s No. 2 Morrison, NW cor. NE Section 20-32-21w, was drilled to a total depth of 6,909 feet, where it found water and was abandoned. It was started as a gas test and after failing to find production in the upper horizons it was drilled to test the deeper formations in the area.

A wildcat test in Finney County was proceeding after landing the longest string of 13-inch casing ever landed in the State. The test, National Refining Co.'s No. 1 Wells, C SW Section 13-24-30w, cemented 13-inch casing at 2,075 feet and was drilling deeper at 2,600 feet on the last day of the year. The owners report if commercial production is not found in any of the upper formations the test may be drilled to a depth of 8,000 feet.

Hugoton Gas Field Extended

The Hugoton Gas Field was extended approximately 25 miles to the northeast by a well in Haskell County during the year. The well was Trees Oil Co. and others' No. 1 Warner, C SE Section 29-30-34w, which was completed for 14,000,000 feet of gas per day from the regular producing formation, known as the Colorado shale.

The Hugoton Gas Field is considered one of the most promising gas areas in the country and is expected to be the scene of an intensive drilling campaign next year. The field closed the year with approximately 148 wells with an estimated open flow of 900,000,000 feet per day. The average potential volume of gas per well in the field was 6,000,000 feet a day, with a rock pressure of 429 pounds. The new well in Haskell County shows a rock pressure of 442 pounds. The development of the large gas reserves has been delayed while connections are being made to the interstate pipe lines which will carry the majority of the gas produced in this field to the north and northeast. To meet this demand considerable more development is expected during 1932.

KANSAS

Completed Wells in 1931 by Counties

County—	Comp.	Prod.	Dry	Gas
Butler	15	975	6	3
Greenwood	34	1,835	17	0
McPherson	173	114,952	13	52
Barton	2	480	1	0
Clark	1	0	1	0
Morton	3	0	0	3
Cowley	38	1,590	20	8
Marion	8	425	2	1
Sedgwick	49	13,425	13	0
Harvey	8	1,009	6	0
Morris	10	0	3	7
Rush	3	400	0	2
Rice	21	4,720	9	3
Stevens	26	0	0	26
Sumner	4	65	2	0
Woodson	1	0	1	0
Kingman	2	216	1	0
Kiowa	1	0	1	0
Barber	2	0	1	1
Chase	4	0	2	2
Ellsworth	8	614	6	0
Gove	2	0	2	0
Pawnee	1	0	1	0
Pratt	1	0	1	0
Ellis	4	490	2	0
Reno	11	886	1	3
Rooks	3	300	2	0
Russell	16	2,485	3	0
Saline	1	0	1	0
Elk	3	335	1	0
Lyon	2	0	2	0
Geary	1	0	1	0
Coffey	2	50	1	0
Ness	1	0	1	0
Franklin	3	0	3	0
Chautauqua	2	0	1	1
Haskell	1	0	1	0
Harper	1	0	1	0
Ford	1	0	1	0
Total, 1931	470	144,921	129	112

Summary by Months

Month—	Comp.	Prod.	Dry	Gas
January	47	13,798	13	12
February	40	9,196	16	3
March	48	10,312	15	12
April	33	7,353	7	11
May	41	13,569	14	8
June	47	21,260	14	12
July	43	7,525	13	10
August	49	23,913	7	20
September	25	3,643	9	8
October	38	11,387	8	9
November	31	12,845	8	4
December	28	10,120	6	3
Total, 1931	470	144,921	129	112
Total, 1930	1,036	238,296	423	169
Difference	566	93,375	294	56
1929	1,058	165,611	459	82
1928	1,157	101,043	455	115
1927	1,333	98,253	569	79
1926	2,338	173,674	784	96
1925	2,062	207,880	636	86
1924	1,125	92,668	398	78

KANSAS (Continued)

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
Rice—													
Daily average	662	638	678	625	1,132	1,255	1,082	836	706	1,598	3,330	2,540	
Month	20,522	17,864	21,018	18,750	35,092	37,650	33,542	25,916	21,180	49,538	99,900	78,740	450,562
Russell—													
Daily average	3,186	2,964	3,155	3,104	3,174	3,183	2,738	2,791	3,112	2,974	3,007	3,065	
Month	98,766	82,992	97,805	92,120	98,394	95,490	84,878	86,521	93,360	92,194	90,210	95,015	1,108,745
Reno—													
Daily average	34	30	21	160	218	210	267	237	365	355	257	245	
Month	1,054	840	651	4,800	6,758	6,300	8,277	7,347	10,950	11,005	7,710	7,595	73,287
Harvey—													
Daily average	60	268	226	96	95	92	128	120	182	166	186	169	
Month	1,860	7,504	7,006	2,880	2,945	2,760	3,968	3,720	5,460	5,146	5,580	5,239	53,068
Chautauqua—													
Daily average	1,476	2,461	1,965	1,904	1,922	1,911	1,826	1,821	1,819	1,824	1,815	1,762	
Month	45,756	68,908	60,915	57,120	59,582	57,330	56,606	56,451	54,570	56,544	54,450	54,622	632,854
Elk—													
Daily average	1,310	2,862	2,124	2,035	2,010	2,013	2,260	2,193	2,099	2,033	2,032	1,983	
Month	40,610	80,136	65,844	61,050	62,310	60,390	70,060	67,983	62,970	63,023	60,960	61,473	756,809
Wilson—													
Daily average	123	164	168	169	163	161	160	159	163	162	160	151	
Month	3,813	4,592	5,208	5,070	5,053	4,830	4,960	4,929	4,890	5,022	4,800	4,681	57,848
Montgomery—													
Daily average	613	696	773	754	762	756	752	756	1,119	1,122	1,107	1,043	
Month	19,158	19,488	23,963	22,620	23,622	22,680	23,312	23,436	33,570	34,782	33,210	32,333	312,174
Edwards—													
Daily average	107	109	94	94	106	95	81	66	54	48	34	30	
Month	3,317	3,052	2,914	2,820	3,286	2,850	2,511	2,046	1,620	1,488	1,020	930	27,854
Ellis—													
Daily average	247	219	249	364	363	352	272	1,037	994	1,187	1,266	1,147	
Month	7,657	6,132	10,819	10,920	11,253	10,560	8,432	32,147	29,820	36,797	37,980	35,557	238,074
Stafford—													
Daily average											796	715	
Month											23,880	22,165	46,045
Kingman—													
Daily average											53	50	
Month											1,590	1,550	3,140
Allen—													
Daily average	416	493	499	478	471	466	494	496	489	483	487	461	
Month	12,896	13,804	15,469	14,340	14,601	13,980	15,314	15,376	14,670	14,973	14,610	14,291	174,324
Neosho—													
Daily average	470	503	511	482	491	473	477	482	479	473	485	472	
Month	14,570	14,084	15,841	14,460	15,221	14,190	14,787	14,942	14,370	14,663	14,550	14,632	176,310
Lyon—													
Daily average	479	581	603	525	533	527	468	120	328	351	293	311	
Month	14,849	16,268	18,693	15,750	16,523	15,810	14,508	3,720	9,840	10,881	8,790	9,641	155,273
Miami—													
Daily average	862	1,014	1,026	1,060	1,011	1,013	1,011	1,017	1,117	1,274	1,262	1,111	
Month	26,722	28,392	31,806	31,800	31,341	30,390	31,341	31,527	33,510	39,494	37,860	34,441	388,624
Franklin—													
Daily average	260	289	288	284	279	266	279	282	298	299	287	270	
Month	8,060	8,092	8,928	8,520	8,649	7,980	8,649	8,742	8,940	9,269	8,610	8,370	103,809
Douglass—													
Daily average	11	13	14	14	14	13	.....	.....	15	15	14	14	
Month	341	364	434	420	434	390	.....	.....	450	465	420	434	4,152
Bourbon—													
Daily average	37	44	46	39	41	40	25	27	54	48	37	36	
Month	1,147	1,232	1,426	1,170	1,271	1,200	775	837	1,620	1,488	1,110	1,116	14,392
Linn—													
Daily average	127	167	173	155	162	157	169	167	169	167	161	162	
Month	3,937	4,676	5,363	4,650	5,022	4,710	5,239	5,177	5,070	5,177	4,830	5,022	58,873
Anderson—													
Daily average	1,313	1,307	1,402	1,469	1,447	1,442	1,089	1,083	1,081	1,077	1,072	1,056	
Month	40,703	36,596	43,462	44,070	44,857	43,260	33,759	33,573	32,430	33,387	32,160	32,736	450,993
Labette—													
Daily average	16	17	16	16	15	15	.....	.....	.....	.....	.....	.....	
Month	496	476	496	480	465	450	.....	.....	.....	.....	.....	.....	2,863
Woodson—													
Daily average	388	442	286	256	301	336	262	177	115	116	114	119	
Month	12,028	12,376	8,866	7,680	9,331	10,080	8,122	5,487	3,450	3,596	3,420	3,689	88,125
Daily average	110,725	119,322	112,858	109,396	107,786	105,848	99,672	101,333	104,901	102,486	104,389	103,182	106,730
Total 1931	3,432,475	3,341,016	3,498,598	3,281,880	3,341,366	3,175,440	3,089,332	3,141,323	3,147,030	3,177,066	3,131,670	3,198,642	38,956,338
Total 1930	3,273,197	2,965,704	3,504,395	3,734,253	3,978,385	3,765,060	3,541,409	3,491,530	3,405,510	3,571,913	3,459,330	3,432,661	42,123,247
Total 1929	2,861,641	2,557,968	2,951,076	3,112,740	3,665,099	3,636,150	3,867,157	3,816,555	3,780,690	3,429,468	3,430,560	3,549,066	40,658,170
Total 1928	3,319,325	3,079,887	3,379,031	3,412,360	3,367,809	3,202,050	3,171,548	3,147,058	3,047,250	3,058,460	2,977,800	2,988,400	38,150,878
Total 1927	3,769,879	3,352,076	3,675,143	3,516,930	3,704,314	3,437,580	3,454,082	3,442,240	3,341,340	3,509,169	3,313,650	3,427,174	41,943,577
Total 1926	3,250,536	2,877,812	3,334,887	3,330,120	3,516,640	3,366,450	3,582,267	3,681,436	3,450,060	3,714,637	3,593,490	3,654,156	41,346,511

Central and Western Texas' Quiet Year

Wichita Falls, Ranger, Permian Basin and Panhandle Areas Hold Back Operations Until East Texas Oil Flood Subsides

By L. E. Bredberg

The North Texas, Central Texas, West Texas and Texas Panhandle Fields felt the influence of the overproduced East Texas Field in 1931 and a review of operations and results in the vast area included in the four divisions was productive of little of an interesting character outside of failure of important tests in counties on the west side of the State in which big pools have been under development for two or more years.

Production fell from around 238,000 bbls. per day during the beginning of the year to around 173,000 bbls. the last part of December, 1931, showing a decrease of 65,000 bbls. of oil per day in the district, the allowables in the various fields in the district being cut 10 per cent on October 10, 1931.

Wildcatting was cut to a minimum in the district, as major oil companies quit, giving acreage or cash in helping wildcatters to drill tests in the Permian Basin. It is almost impossible to obtain outside finances or aid in drilling a wildcat in the district at the present time, and those who are acquainted with the situation are of the opinion that West Texas will not stage a "comeback" until flush production is dissipated in East Texas. Around 1,500,000 acres, both in blocks and checkerboard acreage, have been surrendered during 1931 in order to cut rentals and to keep down expenses. Price of rentals were cut on many leases the companies maintained. Leasing has been at a standstill in the district during the year, only a small amount of acreage having been blocked or taken as production acreage in the district.

Most Pools on Full Production

There are 28 pools in the entire district, but only two of these, the Penn Pool in Ector County and the Yates Field in Pecos County, are able to produce their allowables. The former has an allowable of 6,300 bbls. per day and a potential of over 25,000 bbls. per day, while the Yates Pool has been curtailed to 65,000 bbls. per day, but its 24-hour potential is rated at 4,800,000 bbls. for one day. Last production figures show the field producing only 57,000 bbls. per day, from 402 wells.

Approximately 5,000,000 bbls. of steel storage was cut down in West Texas during 1931, and moved to East Texas to be reconstructed in that district.

Important Wildcats

There have been several interesting wildcat wells drilled in West Texas during the year, but only two or three proving to be producers, none of them developing into discoveries of major importance. Some of these tests which were completed, but not proving producers, carried good showings of oil and gas, which may lead to other tests being drilled to thoroughly test the surrounding and offset acreage in these various areas. However, wildcatting will continue at a minimum in the district for several months to come.

Ward County has been the most active county during the year. This county reported 53 tests completed, only six of them proving dry holes. Up to December this county had 20 operations, 10 of which were active tests, 9 reported as shut down, with 1 rig standing. There has been an average from three to five locations made in the county every month during the year. Most of the wells have been drilled in the extension area between the Shipley and Bennett Pools in the area surrounding Texas Pacific Coal & Oil Co.'s No. 1 Barker, the extensioner in the area. It is located in Section 27, Block B-29. Strum and Simms Oil Co. extended this area approximately 2 miles southeast when they drilled in their No. 1 Jones in September, with an initial production of 120 bbls. per day at a total depth of 2,485 feet. This completion practically linked the Shipley and Bennett Pools and was responsible for several offset locations by various companies and independents which are operating in the area.

Shipley, Byrd & Harmon's No. 1 Lee Monroe, a rank wildcat in western Ward County, located in Section 3, Block 1, W.&N.W. Survey, opened the first Delaware sand pool in the county in November, 1931, making two heads after shooting from 4,634-66 feet. The first two flows were estimated at from 75 to 200 bbls. of oil. The well is now making 100 bbls. every other day, flowing in storage. Total depth of the hole was 4,666 feet, but it was plugged back to 4,661 feet before shooting. Gravity of the oil tested 32.5, approximately 7.5 degrees below the gravity of the Delaware sand production in the Wheat Pool, Loving County, which is 13 miles northwest of the Monroe discovery. Top of the sand in the latter well was logged at minus 2,008 feet, 450 feet lower than the average sand depth in the Wheat Pool.

Gulf Production Co.'s small discovery in Section 23, Block 27, Public School Lands Survey, Western Crane County, was responsible for two other tests being drilled in this area during the year, both of them proving dry holes. The discovery was completed for an initial production of 107 bbls. per day, from pay topped at 4,295 feet. It was drilled to a total depth of 5,336 feet, but plugged back and shot with 100 quarts of nitroglycerin from 4,319-4,279 feet. This was the first well in the Permian Basin to produce below the sulphur water strata, and was first believed to be of major importance. The two dry holes, one drilled

TEXAS PANHANDLE

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
CARSON COUNTY:													
Daily average	4,227	3,175	3,450	3,542	4,288	5,217	4,445	4,736	5,208	5,502	5,129	5,249	
Month	131,037	88,900	106,950	106,260	132,928	156,510	137,795	146,816	156,240	170,562	153,870	162,719	1,650,587
HUTCHINSON COUNTY:													
Daily average	8,405	9,047	7,949	8,409	9,942	9,644	11,215	11,575	13,838	14,248	12,982	11,964	
Month	260,555	253,316	246,419	252,270	308,202	289,320	347,665	358,918	415,140	441,688	389,460	370,884	3,933,837
WHEELER COUNTY:													
Daily average	328	399	273	204	171	246	245	336	356	391	482	477	
Month	10,168	11,172	8,463	6,120	5,301	7,380	7,595	10,416	10,680	12,121	14,460	14,787	118,662
GRAY COUNTY:													
Daily average	43,354	40,714	39,435	41,733	45,400	43,218	38,489	40,940	43,280	43,373	35,166	32,507	
Month	1,343,974	1,139,992	1,222,485	1,251,990	1,407,400	1,296,540	1,224,159	1,269,140	1,298,400	1,344,563	1,054,980	1,007,717	14,861,340
POTTER COUNTY:													
Daily average	6	.....	.....	.....	.....	.....	21	.....	.....	.....	.....	.....	
Month	186	.....	.....	.....	.....	.....	651	.....	.....	.....	.....	.....	837
MOORE COUNTY:													
Daily average	262	227	285	186	141	507	1,198	925	1,543	1,492	1,497	1,395	
Month	8,122	6,356	8,835	5,580	4,371	15,210	37,138	28,675	46,290	46,252	44,910	43,245	294,984
Daily average	56,582	53,562	51,392	54,074	59,942	58,832	56,613	58,515	64,225	65,006	55,256	51,592	57,151
Total 1931	1,754,042	1,499,736	1,593,152	1,622,220	1,858,202	1,764,960	1,755,003	1,813,965	1,926,750	2,015,186	1,657,680	1,599,352	20,860,248
Total 1930	2,655,398	2,467,080	2,750,971	2,835,960	3,297,315	3,156,941	3,024,422	3,015,277	2,388,000	2,523,617	2,190,900	2,186,151	32,492,032
Total 1929	1,882,878	1,632,196	1,846,213	1,834,980	2,086,579	2,622,680	2,918,278	2,935,608	3,548,100	3,242,538	2,962,110	3,230,634	31,742,794
Total 1928	2,408,359	2,247,607	2,253,173	2,044,020	2,115,409	1,965,484	1,973,595	1,960,316	1,897,110	2,061,376	1,835,710	1,854,335	24,736,494
Total 1927	4,004,052	3,528,280	3,654,590	3,749,610	4,174,131	3,814,380	3,469,910	3,071,790	2,882,640	2,735,719	2,488,530	2,526,097	40,089,780
Total 1926	167,077	152,264	245,024	393,660	876,597	1,430,400	2,023,742	2,973,848	3,421,890	4,534,339	4,595,220	4,741,326	25,545,887

NORTH TEXAS

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
BURKBURNETT:													
Daily average	7,611	7,483	6,670	7,012	6,710	6,816	6,338	6,299	6,714	6,690	6,416	6,211	
Month	235,941	209,524	206,770	210,360	208,010	204,480	196,478	195,269	201,420	207,390	192,480	192,541	2,460,663
ELECTRA:													
Daily average	8,702	8,577	8,362	8,546	8,313	8,401	7,812	7,716	7,811	7,762	7,514	7,244	
Month	269,793	240,156	259,222	256,380	257,703	252,030	242,172	239,196	234,330	240,653	225,420	224,564	2,941,619
IOWA PARK, K. M. A.:													
Daily average	3,714	3,480	4,013	3,610	3,331	3,326	3,093	3,014	3,405	3,388	3,267	3,222	
Month	115,134	97,440	124,403	108,300	103,261	99,780	95,883	93,434	102,150	105,028	98,010	99,882	1,242,705
ARCHER COUNTY:													
Daily average	13,139	11,717	11,547	12,086	11,656	11,573	11,618	11,647	13,021	12,365	11,977	11,793	
Month	407,309	328,076	357,957	362,580	361,236	347,190	360,158	361,057	390,630	383,315	359,310	365,738	4,384,656
CLAY COUNTY:													
Daily average	644	645	626	611	545	610	533	443	541	584	554	551	
Month	19,964	18,060	19,406	18,330	16,895	18,300	16,523	13,732	16,230	18,104	16,620	17,081	209,246
WILBARGER COUNTY:													
Daily average	12,660	9,782	10,233	9,757	10,006	9,974	12,814	12,876	13,793	12,068	11,670	11,201	
Month	392,460	273,896	317,223	292,710	310,186	299,220	397,234	399,156	413,940	374,108	350,100	347,231	4,167,464
MONTAGUE COUNTY:													
Daily average	3,956	3,622	3,637	3,503	3,401	3,442	2,869	2,938	3,676	4,052	4,611	4,444	
Month	122,636	101,416	112,747	105,090	105,431	103,260	88,939	91,078	110,280	125,612	138,330	137,764	1,342,583
YOUNG COUNTY:													
Daily average	11,151	12,007	13,068	12,191	12,180	12,614	10,442	9,568	11,893	11,961	11,099	10,973	
Month	345,681	327,876	405,108	365,730	377,580	378,420	323,733	296,608	356,940	370,791	332,970	340,163	4,231,600
BAYLOR COUNTY:													
Daily average	848	640	509	496	463	467	573	675	637	599	554	533	
Month	26,288	17,920	15,779	14,880	14,353	14,010	17,763	20,925	19,110	18,569	16,620	16,523	212,739
COOKE COUNTY:													
Daily average	1,928	1,958	1,814	1,815	1,709	1,771	1,419	1,490	1,642	1,767	1,736	1,814	
Month	59,748	54,824	56,234	54,450	52,979	53,130	43,989	46,190	49,260	54,777	52,080	56,234	633,915
FOARD COUNTY:													
Daily average	77	47	47	53	69	62	69	70	69	68	75	71	
Month	2,387	1,316	1,457	1,590	2,139	1,860	2,139	2,170	2,070	2,108	2,250	2,201	23,687
Daily average	64,431	60,018	60,524	59,680	58,383	59,056	57,581	56,736	63,213	61,305	59,473	58,062	59,865
Total 1931	1,997,361	1,680,504	1,876,306	1,790,400	1,809,873	1,771,680	1,785,011	1,758,816	1,896,360	1,900,455	1,784,190	1,799,922	21,850,878
Total 1930	2,766,393	2,563,792	2,869,587	3,053,580	3,163,351	3,043,020	2,881,450	2,759,217	2,430,390	2,367,904	2,226,210	2,191,204	32,299,096
Total 1929	2,794,619	2,412,788	2,760,705	2,729,250	2,793,286	2,759,550	3,108,990	3,128,458	2,967,270	3,015,556	2,832,930	2,958,336	34,261,732
Total 1928	2,441,002	2,247,790	2,483,100	2,465,970	2,600,559	2,687,207	2,977,993	3,151,181	2,915,790	2,987,594	2,794,830	2,957,989	32,711,065
Total 1927	2,884,736	2,621,220	2,996,367	2,885,220	3,202,703	3,064,920	3,043,332	2,993,236	2,882,790	2,708,780	2,641,140	2,680,632	34,605,076

2 miles to the south by Cranfill Brothers on the Muir ranch, and the second by the Southwest Oil Production Co. and Penn Oil Co. in Section 3, Block B-27, 3 miles to the northwest of the discovery, disproved the theory that the pool would be a large one. The former test was abandoned at 4,457 feet, and the latter at 4,510 feet. The discovery is now believed to be producing from a crevice and is considered a freak well.

Loving County Discovery

Lewis & Slagel's (Eppenauer Drilling Co.) No. 1 Henderson, or Cartwright, located in Section 1, Block 57, T.&P. Survey, near the New Mexico line, in northern Loving County, was believed to have opened another Delaware sand pool similar to the Wheat Pool, when it was completed for a 25-bbl. well, making 50 bbls. of water per day. It is now on the pump, and is rather disappointing, not giving much hopes for the area, although a second test, now drilling in Section 6, Block 56, Township 1, T.&P. Survey, will be closely watched to note whether or not it will extend production, and perhaps make a better producer than the first well drilled in this area. If it proves a producer, then Delaware sand production will no doubt be extended over into New Mexico.

Two interesting deep wildcat tests are now being drilled in Irion County. These two tests will seek the deep pay found in the Big Lake Pool, Reagan County, which lies to the west. The Stanolind Oil & Gas Co. is drilling its No. 1 Williams in Section 1,196, T.T. Survey, in the southeast corner of the county. It is now down below 6,700 feet. A 122-foot derrick was recently erected over the hole and heavy rotary equipment moved in to carry the well on down. This is believed to be the first rotary equipment ever to have been used in drilling a wildcat well in this district.

The other deep test going down in the county is being drilled by the Plymouth Oil Co. on the Suggs ranch, in Section 3,081, Block 28, H.&T.C. Survey, approximately 11 miles west of Mertzon. This test is now drilling below 5,600 feet.

Deep Tests in Pecos County

Pecos County has seen considerable activity during the year, although far below the normal of past years. Several interesting wildcats were drilled, especially the deep ones in the southwestern part of the county, but they all proved dry.

The Humble Oil & Refining Co.'s No. 1 Kokernot, in western Pecos County, was completed in March, 1931, at a total depth of 6,170 feet. This test was located in Section 227, Block 10, G.H.&S.A. Survey. The depth of this test exceeds the average depth of wildcats drilled in the county by about 2,500 feet, consequently it was considered as one of the most interesting ever drilled in the county. Its location on the extreme western side of the county also contributed to the interest taken in it.

The Pure Oil Co. temporarily abandoned another important test in the western part of the county. It is now shut down at 5,100 feet. The well is located in Section 203, Block 3, T.&P. Survey, approximately 14 miles southwest of Fort Stockton, and 7 miles northeast of Penn Oil Co.'s No. 1 Alvis, which was abandoned at 3,925 feet. That test was located in Section 155, Block 3, of the same survey, and drew some attention to it when a pocket of gas was struck at 865 feet, with an increase encountered at 905-15 feet, picking up a slight oil showing a little deeper.

In Central Texas

In February a small pool was opened 4 miles southeast of the Goldsboro Pool, western Coleman County, by Barney Carter, in Section 24, T.&N.O. Survey, but the pool has not grown very much during the year. There was no other discovery of consequence in the district during the year, activities being almost at a standstill, except for drilling in some of the pools throughout the Ranger district.

The Strawn Townsite Pool was one of the most active areas in the Ranger district during the year, over 20 gas producers having been completed and tied into by gas gathering lines of the Lone Star Gas Co. and Texas Public Utilities Co. The former laid 4 miles of 8-inch line to connect with its main line system south of Strawn, and the latter company laid 20 miles of 8-inch from the pool to connect with its power plant on the Leon River near Eastland.

F. L. Walker drilled the largest gas producer in the field during the latter part of December, this well making 24,000,000 feet of gas from the Strawn sand, which was logged at 2,997-3,017 feet. The well is located in Block 14. Strawn townsite is in Palo Pinto County.

The Lone Star Gas Co. purchased approximately 72,000 acres of gas producing lands from the Texas Pacific Coal & Oil Co. in the latter part of the year, this land located near the town of Strawn and lying in Eastland, Palo Pinto and Stephens Counties. The land is estimated as having a potential of 50,000,000 feet of gas per day.

The Chalk Hill Pool, Archer County, has been one of the most active and interesting areas in the Wichita Falls district, due to several deep tests being drilled. The Deep Oil Development Co. and Lindsay Drilling Co. took over the well and plugged it back to the producing sand at 3,614-38 feet, where it formerly produced 50 bbls. per day of 42 gravity oil before deepening.

The Deep Oil Development Co. and others completed a good well in Section 119, A.T.N.C. Survey, Chalk Hill Pool, Archer County, at a total depth of 2,212 feet, after topping the sand at 2,196 feet. It made an initial production of 520 bbls. through three-quarter-inch choke. Gravity of the oil was 42.8.

The Bell Oil & Gas Co. purchased the Tidal-Western Oil Corp.'s gathering system in the Burkburnett area, which included 40 or 50 miles of line, steel storage and lease tanks. Oil will be taken from the latter's system at Bridgetown, Tex., and transported to Grandfield, Okla., where Bell Oil & Gas Co. has a refinery.

Panhandle Quiet

There were no interesting discoveries made in the Panhandle district outside of January when the Sunray Oil Co. completed one of the best wells ever produced in Moore County. The well came in making 1,000 bbls. of oil in nine hours, with 20,000,000 feet of gas. It is located in Section 164, Block 3, T.&N.O. Survey, approximately 10 miles northeast of the town of Dumas. This well led to the construction of a small refinery on the railroad, 8 miles south of the pool, at Sunray.

NORTH CENTRAL TEXAS

Summary of Operations by Counties in 1931

County—	Comp.	Prod.	Abd.	Gas
Archer	150	3,831	105	0
Baylor	5	0	5	0
Brown	41	227	24	7
Callahan	24	175	17	3
Clay	7	45	4	2
Coleman	88	6,287	47	9
Collin	3	0	3	0
Comanche	5	35	4	0
Cooke	28	467	21	0
Denton	8	0	8	0
Eastland	37	246	16	14
Erath	5	0	5	0
Foard	5	0	4	1
Grayson	10	0	10	0
Gray	1	0	1	0
Haskell	3	0	3	0
Hamilton	1	0	1	0
Hood	4	0	3	1
Hardeman	2	0	2	0
Jack	11	965	4	4
Johnson	1	0	1	0
Montague	2	40	1	0
McCulloch	1	0	1	0
Palo Pinto	54	60	27	24
Parker	7	0	6	1
Shackelford	30	107	19	3
Stephens	16	14	9	6
Throckmorton	19	0	16	3
Wichita	65	987	38	0
Wise	3	0	3	0
Wilbarger	23	51	19	0
Young	396	17,709	250	0
Total, 1931	1,055	31,246	677	78

Summary by Months

Month—	Comp.	Prod.	Abd.	Gas
January	182	6,228	119	16
February	143	3,650	87	8
March	126	3,771	88	3
April	93	2,159	68	8
May	112	3,660	70	17
June	73	4,392	41	2
July	42	557	34	2
August	63	1,131	47	2
September	48	950	31	7
October	60	1,142	32	5
November	48	2,145	26	4
December	65	1,461	34	4
Total, 1931	1,055	31,246	677	78
Total, 1930	2,909	138,500	1,624	133
Difference	1,854	107,254	947	55

TEXAS PANHANDLE

Summary of Operations by Counties in 1931

County—	Comp.	Prod.	Abd.	Gas
Carson	43	475	3	35
Cochran	1	0	1	0
Cottle	1	0	1	0
Childress	1	0	1	0
Gray	89	24,559	12	13
Hall	1	0	1	0
Hutchinson	28	2,131	3	11
Lipscomb	1	0	1	0
Lubbock	1	0	1	0
Moore	23	6,127	1	13
Motley	1	0	1	0
Potter	3	0	1	2
Wheeler	6	25	2	3
Total, 1931	199	33,317	29	77

Summary by Months

Month—	Comp.	Prod.	Dry	Gas
January	32	9,780	2	12
February	28	7,767	5	7
March	28	897	12	10
April	23	5,989	4	7
May	23	1,695	1	12
June	12	429	2	7
July	12	1,751	0	3
August	8	180	2	4
September	7	1,015	1	1
October	8	1,835	0	4
November	8	165	0	7
December	10	1,814	0	3
Total, 1931	199	33,317	29	77
Total, 1930	587	178,878	72	172
Difference	388	145,561	43	95

(Continued on Page 121)

CENTRAL TEXAS

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
BROWN COUNTY:													
Daily average	3,681	3,718	3,502	3,496	3,564	3,444	3,435	3,032	3,103	2,877	2,931	2,850	
Month	114,111	104,104	108,562	104,880	110,484	103,320	106,485	93,992	93,090	89,187	87,930	88,350	1,204,495
CALLAHAN COUNTY:													
Daily average	1,307	1,486	1,458	2,604	2,543	2,476	1,360	1,506	1,610	1,346	1,498	1,472	
Month	40,517	41,608	45,198	78,120	78,833	74,280	42,160	46,686	48,300	41,726	44,940	45,632	628,000
COLEMAN COUNTY:													
Daily average	1,004	1,506	1,400	1,640	1,741	1,672	2,021	2,096	2,012	1,948	1,994	2,722	
Month	31,124	42,168	43,400	49,200	53,971	50,160	62,651	64,976	60,360	60,388	59,820	84,382	662,600
COMANCHE COUNTY:													
Daily average	135	129	124	128	126	127	72	62	64	64	84	77	
Month	4,185	3,612	3,844	3,840	3,906	3,810	2,232	1,922	1,920	1,984	2,520	2,387	36,162
EASTLAND COUNTY:													
Daily average	3,539	3,874	3,606	3 527	3,440	3,466	3,140	3,277	3,286	3,181	3,112	2,629	
Month	109,709	108,472	111,786	105.810	106.640	103,980	97,340	101,587	98,580	98.611	93,360	81,499	1,217,374
ERATH COUNTY:													
Daily average	127	157	133	136	152	147	195	203	172	168	194	163	
Month	3,937	4,396	4,123	4,080	4,712	4,410	6,045	6,298	5,160	5,208	5,820	5,053	59,237
JACK COUNTY:													
Daily average	724	706	999	1,161	2,028	2,206	2,145	1,911	2,077	2,059	1,838	1,866	
Month	22,444	19,768	30,969	34,830	62,868	66,180	66,495	59,241	62,310	63.829	55,140	57,846	601,920
JONES COUNTY:													
Daily average	1,253	1,324	1,239	1,313	1,290	1,293	1,373	1,391	1,412	1,211	1,248	1,211	
Month	38,843	37,072	38,409	39,390	39,990	38,790	42,563	43,121	42,360	37,541	37,440	37,541	473,060
PALO PINTO COUNTY:													
Daily average	337	336	271	326	291	316	353	319	382	345	340	333	
Month	10,447	9,408	8,401	9,780	9,021	9,480	10,943	9,889	11,490	10,695	10,200	10,323	120,077
RUNNELS COUNTY:													
Daily average	140	120	104	86	83	92	73	71	65	58	60	61	
Month	4,340	3,360	3,224	2,580	2.573	2,760	2,263	2,201	1,950	1,798	1,800	1,891	30,740
SHACKELFORD COUNTY:													
Daily average	3,918	3,955	3,756	3,734	3,781	3,760	2,190	2,111	2,904	3,340	3,387	2,825	
Month	121,458	110,740	116,436	112,020	117,211	112,800	67,890	65,441	87,120	103,540	101,610	87,575	1,203,841
STEPHENS COUNTY:													
Daily average	4,644	4,647	4,539	4,497	4,362	4,382	4,311	4,123	4,412	4,233	4,086	4,530	
Month	143,964	130,116	140,709	134,910	135,222	131,460	123,641	127,813	132,360	131,223	122,580	140,430	1,604,428
THROCKMORTON COUNTY:													
Daily average	237	313	379	361	392	370	363	428	500	495	488	483	
Month	7,347	8,764	11,749	10.830	12,152	11,100	11,253	13,578	15,000	15,345	14,640	14,973	146,731
HASKELL COUNTY:													
Daily average	30	24	24	25	24	26	24	23	24	17	24	22	
Month	930	672	744	750	744	780	744	713	720	527	720	682	8,726
TAYLOR COUNTY:													
Daily average	.....	152	66	98	111	102	61	47	56	63	62	61	
Month	.....	4,256	2,046	2,940	3,441	3,060	1,891	1,39[illegible]	1,680	1,953	1,860	1,891	26,413
Daily average	21,076	22,447	21,600	23,132	23,928	23,879	21,116	20,6[illegible]8	22,080	21,405	21,346	21,305	21,983
Total 1931	653,356	628,516	669,600	693,960	741,768	716,370	654,596	638,8[illegible]8	662,400	663,555	640,380	660,455	8,023,804
Total 1930	1,336,689	1,197,784	1,253,702	1,220,510	1,218,176	1,172,640	1,104,220	1,102,9[illegible]0	1,014,210	952,010	885,210	890,072	13,348,203
Total 1929	1,574,423	1,368,304	1,515,249	1,451,880	1,539,057	1,471,350	1,517,636	1,522,7[illegible]2	1,532,730	1,542,932	1,449,300	1,484,776	17,970,419
Total 1928	1,402,754	1,381,096	1,465,029	1,422,150	1,477,119	1,473,111	1,520,247	1,502,756	1,582,050	1,447,832	1,463,700	1,568,259	17,736,103
Total 1927	1,949,063	1,903,412	2,245,702	2,109,300	2,192,351	1,967,640	1,705,558	1,597,523	1,519,230	1,548,698	1,464,750	1,403,029	21,606,256

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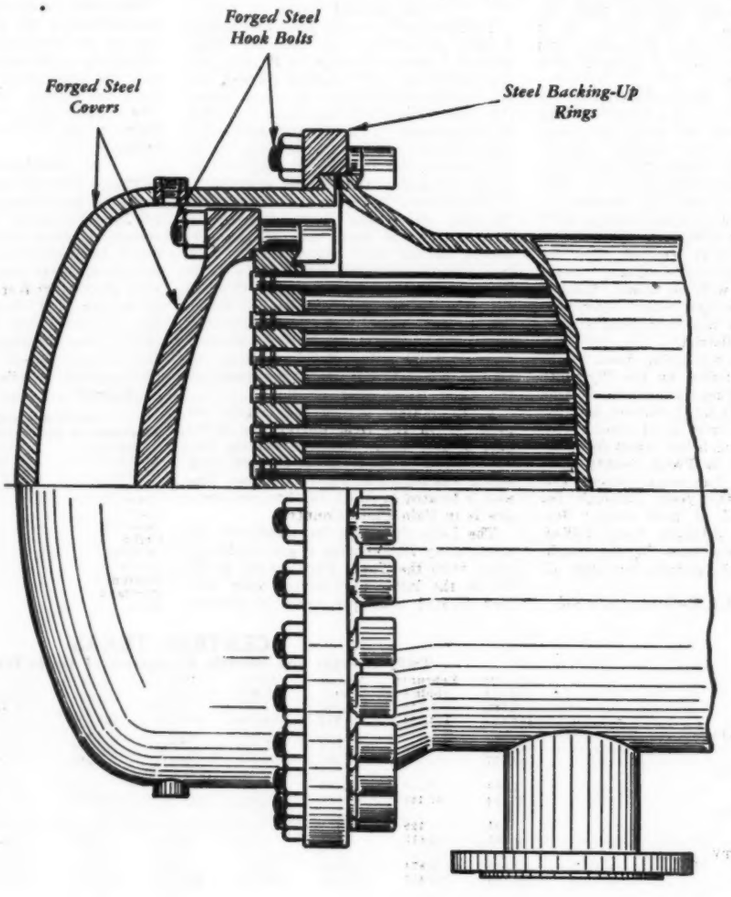

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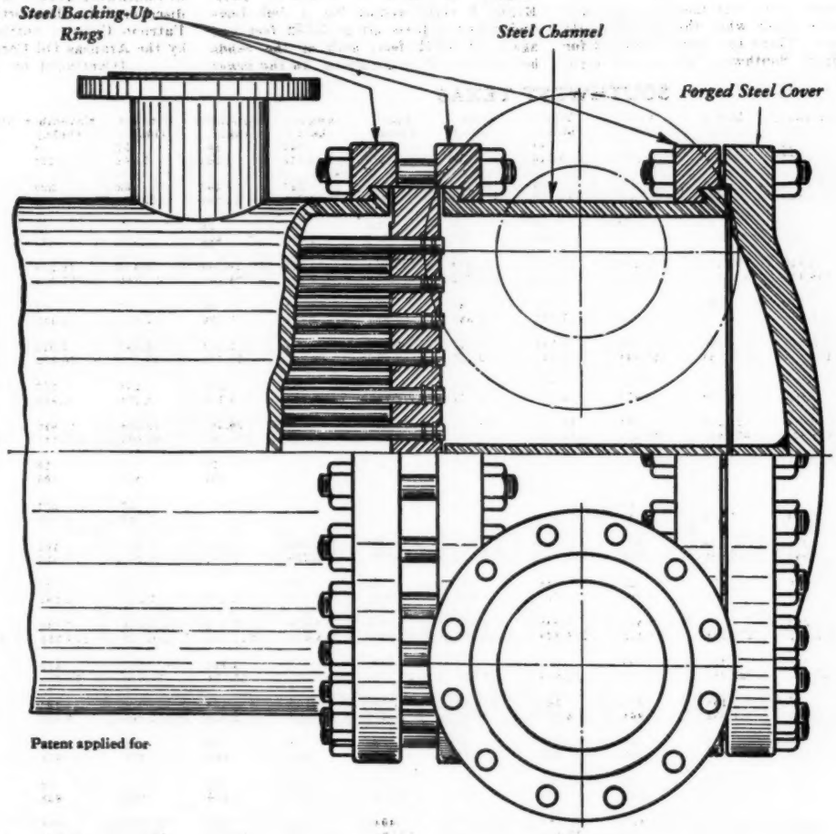

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Temporary Lull in Southwest Texas

Overproduction in East Texas Caused Lessening of Activity in Field Known to Have Excellent Opportunities

By B. D. Stevenson

The measure of activity in Southwest Texas the past year is reflected by the fact that completions for the year number little more than half of those in 1930 and the initial production was less than 65,000 bbls. for 1931 compared with 430,000 bbls. in 1930.

The increase in development on a well laid out program which started in 1929 in Southwest Texas and reached a peak in the close of 1930 was suspended to give attention to the world's biggest pool elsewhere. At the close of 1931, conversely, there is a marked drifting back into Southwest Texas and announced intentions that activity probably will gradually increase down through the year.

However, Southwest Texas was not without its interesting happenings. Some new producing areas were discovered but the only development that has followed of consequence is that in the Schoolfield-O'Byrne extension in northwestern Duval County and a revival of development in the Escobas Pool later in the year An important extension seems to have been opened to the Pettus Pool in Bee County and several tests drilled in Real and Kerr County following the discovery of oil late in 1930 in Evans & Gant's No. 1 Love have proven the great thickness of the Pennsylvania formation but have failed to develop an important pool.

Proration a Minor Incident

Proration has been a minor incident in Southwest Texas. It was enforced in Darst Creek and in a minor way was enforced in Pettus. It was applied to the Joe Bruner Field but the allowable was very little under what the actual would have been. There has been a demand for crude from Southwest Texas and especially for the Laredo district and coastal pools from the Refugio Field south because of the antiknock quality of the gasoline and as a result of all factors total production in Southwest Texas, in spite of the absence of pool development, has been not far below that of the year before.

Edwards Plateau

Late in 1930 Sterling drilled a test in approximately the center of Kendall County and at around 1,000 feet got a small oil well and the first in Southwest Texas above the Balcones fault. No development of the pool followed. Fifty miles west of it in southwestern Kerr County, the first of January, 1931, Evans & Gant drilled No. 1 Jeff Love and found a little oil at 2,552 feet and again at 3,391 feet, both of the sands being in the Pennsylvanian. In the lower sand the well pumped 15 bbls. of oil an hour for a time. Later it made considerable water and was finally deepened to 4,000 feet, where it was abandoned in September, 1931, and No. 2 Love, a mile southeast from it, was later carried to below 5,300 feet and was still in the Pennsylvania at the close of the year and drilling.

This entire area was described fully in The Oil and Gas Journal in the issue of December 31, 1931, on page 17.

Coast Counties

Nueces and San Patricio Counties on the coast have attracted probably as much attention the past year as any spot in Southwest Texas. A new gas pool was discovered in the northern part of San Patricio County, northeast from Sinton, by the Aransas Oil Corp.'s No. 1 Welder,

(Continued on Page 117)

SOUTHWEST TEXAS

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
AGUA DULCE:													
Daily average	26	18	6	35	49	80	109	107	107	57	4	.....	
Month	807	504	189	1,050	1,516	2,390	3,376	3,318	3,212	1,764	121	.....	18,247
BEXAR COUNTY:													
Daily average	304	351	347	387	330	263	255	247	397	406	398	325	
Month	9,432	9,828	10,752	11,613	10,229	7,894	7,905	7,655	11,918	12,586	11,966	10,078	121,856
BRANYON:													
Daily average	23	29	27	24	27	26	23	34	28	25	25	.....	
Month	720	812	837	717	830	771	714	1,059	840	775	745	.....	8,829
BRUNER:													
Daily average	14,403	15,932	14,222	12,213	12,453	11,964	11,221	10,810	10,949	10,431	10,208	8,527	
Month	446,454	446,096	440,893	366,391	386,045	358,912	347,853	335,107	328,464	323,348	306,244	264,342	4,350,149
BUCHANAN:													
Daily average	109	118	116	87	236	86	83	84	87	86	78	72	
Month	3,374	3,304	3,595	2,615	7,318	2,585	2,578	2,604	2,596	2,652	2,342	2,235	37,798
CHAPMAN:													
Daily average	5,392	3,902	4,383	3,585	3,306	3,078	2,813	2,771	2,358	1,031	2,015	1,867	
Month	167,145	109,256	135,884	107,544	102,489	92,331	87,202	85,906	70,731	33,506	60,452	57,892	1,110,338
DALE:													
Daily average	268	271	303	259	236	239	258	262	271	264	253	231	
Month	8,303	7,588	9,390	8,675	7,320	7,177	7,997	8,123	8,136	8,194	7,589	7,170	95,662
DARST CREEK:													
Daily average	31,716	30,676	21,278	24,704	19,771	20,075	19,809	19,744	20,503	19,206	17,915	17,149	
Month	983,213	858,928	659,615	741,116	612,903	602,242	614,076	612,063	615,086	595,401	537,447	531,604	7,963,694
DUNLAP:													
Daily average	.....	.....	.....	.....	.....	.....	.....	.....	25	13	10	9	
Month	.....	.....	.....	.....	.....	.....	.....	.....	750	403	305	274	1,732
GOLIAD COUNTY:													
Daily average	65	52	55	23	.....	.....	.....	.....	.....	51	231	178	
Month	2,009	1,484	1,704	689	.....	.....	.....	.....	.....	1,592	6,930	5,518	19,926
KINGSVILLE:													
Daily average	119	106	119	122	116	112	121	120	106	103	101	110	
Month	3,689	2,968	3,691	3,660	3,592	3,354	3,751	3,720	3,195	3,201	3,026	3,402	41,249
LARREMORE:													
Daily average	15	16	22	22	88	21	71	70	73	81	73	82	
Month	465	448	681	664	2,727	622	2,203	2,172	2,190	2,511	2,191	2,545	19,419
LULING:													
Daily average	9,283	9,360	8,751	8,471	6,996	8,250	8,113	8,028	7,107	7,636	7,645	7,394	
Month	287,789	262,080	271,284	254,132	216,879	247,502	251,508	248,867	213,210	236,713	229,350	229,200	2,948,514
LYTTON SPRINGS:													
Daily average	734	443	722	690	697	702	673	642	1,110	633	611	629	
Month	22,746	12,404	22,382	20,694	21,607	21,076	20,861	19,901	33,304	19,620	18,335	19,510	252,440
MANFORD:													
Daily average	169	167	146	132	143	140	109	106	124	126	101	106	
Month	5,235	4,676	4,532	3,964	4,433	4,201	3,377	3,284	3,720	3,906	3,032	3,285	47,635
McMULLEN COUNTY:													
Daily average	26	20	20	20	16	20	18	20	20	25	29	29	
Month	815	560	620	600	495	596	556	622	600	775	874	886	7,999
MEDINA COUNTY:													
Daily average	22	22	22	22	22	22	34	22	22	23	22	21	
Month	678	616	683	660	681	656	1,057	683	660	682	658	655	8,369
MINERVA:													
Daily average	352	347	378	423	385	375	404	404	360	352	404	400	
Month	10,936	9,716	11,725	12,689	11,933	11,238	12,522	12,526	10,810	10,902	12,121	12,404	139,522
MIRANDO DISTRICT:													
Daily average	14,092	13,455	13,366	13,397	12,627	12,280	12,303	12,374	13,618	15,842	14,726	17,789	
Month	436,872	376,740	414,340	401,907	391,432	368,404	381,394	399,095	408,528	491,109	441,777	551,473	5,063,071
NORMANNA:													
Daily average	26	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Month	799	784	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,583
NORTH PETTUS:													
Daily average	223	285	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Month	6,906	7,980	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14,886
PETTUS:													
Daily average	7,829	6,854	5,836	7,297	7,172	6,773	6,384	6,204	5,942	5,791	5,746	5,948	
Month	242,710	191,912	180,922	218,918	222,343	203,188	197,902	192,327	178,267	179,534	172,382	184,385	2,364,790
SAXET:													
Daily average	85	166	168	242	310	562	553	455	526	602	684	621	
Month	2,654	4,648	5,199	7,255	9,611	19,876	17,148	14,101	15,779	18,676	20,525	19,240	154,712
SOMERSET:													
Daily average	1,340	1,357	1,337	1,269	1,195	1,193	1,143	1,057	1,081	1,145	1,050	1,134	
Month	41,530	37,996	41,450	38,067	37,046	35,782	35,431	32,771	32,425	35,495	31,496	35,150	434,639
S. R. C.-VACUUM:													
Daily average	169	119	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Month	5,253	3,332	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,585
THRALL:													
Daily average	36	34	35	35	35	34	35	35	35	34	35	34	
Month	1,115	952	1,083	1,050	1,085	1,026	1,084	1,096	1,050	1,050	1,047	1,054	12,686
WHITE POINT:													
Daily average	20	25	48	47	44	44	46	46	49	47	47	50	
Month	603	700	1,240	1,412	1,367	1,297	1,425	1,422	1,473	1,457	1,411	1,540	15,352
YOAST:													
Daily average	215	228	253	183	180	247	232	247	232	183	183	189	
Month	6,670	6,384	7,843	5,489	5,577	7,426	7,193	7,654	6,960	5,850	5,490	5,857	78,393
Daily average	87,062	84,282	71,952	73,719	66,424	66,685	64,810	64,389	65,130	64,248	62,595	62,894	69,430
Total 1931	2,698,916	2,362,596	2,230,534	2,211,571	2,059,458	2,000,546	2,009,113	1,996,070	1,953,904	1,991,702	1,877,856	1,949,699	25,342,065
Total 1930	1,981,174	1,813,896	1,977,584	1,893,330	2,188,405	2,421,341	3,071,290	3,422,468	3,239,136	3,427,015	2,762,804	2,832,752	31,033,194
Total 1929	1,453,427	1,527,677	2,021,412	2,199,207	2,412,599	2,424,277	2,349,745	2,350,867	2,148,828	2,029,702	1,818,328	1,744,091	24,481,160
Total 1928	825,036	789,196	839,945	807,553	804,627	774,570	804,643	820,468	844,550	892,350	912,608	1,168,912	10,284,452
Total 1927	1,245,673	1,075,312	1,167,584	1,112,760	1,092,233	1,020,180	1,005,733	985,149	959,850	923,242	868,290	878,502	12,331,498
Total 1926	1,333,397	1,160,720	1,220,842	1,176,630	1,208,163	1,062,020	1,302,333	1,425,690	1,371,420	1,368,092	1,284,180	1,278,502	15,132,989

62

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No Large Development in La.-Ark. Area

Past Year Saw Discovery or Limited Development of Several Gas Areas in North Louisiana. Mississippi Results

By J. R. Crumpton

Operations during 1931 did not confirm the discovery of a new commercial oil or gas field in the division consisting of North Louisiana, Arkansas, Mississippi and the border counties of East Texas.

Although wildcats in three different districts developed enough production to indicate the existence of new producing areas, none of them were developed to the extent of listing them as large commercial fields.

Encouraging Wildcats

Of the several wildcats to have encouraging results during the past year, the Langbridge Oil Co.'s No. 1 Stephens, Section 17-9-11, northern Sabine Parish, seems to have the best chance of opening up a new producing dome. Although not a gusher, the well has been flowing by heads since its completion in October from 30 to 50 bbls. daily of 39 gravity pipe line oil through 2-inch tubing. The total depth of the hole is 3,626 feet, but production is coming from 3 feet of sand from 3,366-69 feet. The new producing wildcat is 5½ miles southeast of the Pleasant Hill Field and 10 miles north of the Zwolle chalk rock field. Production is coming from practically the same horizon as in Pleasant Hill.

Important Gas Strike

Another wildcat development in this district of the division during 1931 was E. L. Chapman's No. 1 Pickering Lumber Co., C. E. Henry Survey, in the northeastern part of Shelby County, East Texas, near the Louisiana state line. Although never completed for its full potential flow, the test proved the existence of a new gas field from the deeper horizons on the western side of the Sabine uplift. The territorial extent of production is yet to be proven as no other tests have been drilled. The new gasser first blew in unexpectedly last June from a total depth of 3,864 feet and was estimated to have an initial flow of 25,000,000 feet. The new gasser is about 2 miles west of the Louisiana line, across the Sabine River from the town of Logansport in DeSoto Parish, and is about 1 mile east of Joaquin in Shelby County, East Texas. No accurate identification of the formation from which the gas is coming has been made on account of inability to get a core from the bottom of the hole. It is believed to be below the Woodbine in the lower Cretaceous, and more than likely the gas is coming from the Glenrose of the upper Trinity, which pays off in other fields located on the Sabine uplift.

Minor Discoveries

There were three other wildcats in North Louisiana to show enough production to warrant further explorations in their respective areas, but they have, so far, failed to confirm the existence of commercial fields. The only oil show from this number came from northwestern Bossier Parish in the Plain Dealing Oil Corp.'s No. 1 Nattin, Section 15-22-14. This well bailed considerable oil of 24.5 gravity with a small show of gas, from a total depth of 2,882 feet. The bit had penetrated 11 feet of sandy shale from 2,871 feet to the total depth. After failing to pay in commercial quantities, the hole was deepened to 2,890 feet with no increase in production resulting. The test has recently been shot and swabbed and is flowing by heads from 5 to 15 bbls. daily of pipe line oil with no salt water present. The wildcat is about 8 miles west of the Dallas Oil Co.'s No. 1 Scovall & Gaines, Section 22-22-13, which was drilled in 1917 and which flowed from 1,200 to 1,500 bbls. of oil daily for several days from a total depth of 2,824 feet. This well sanded up and went dead and all efforts to revive it failed. Other tests drilled in the immediate vicinity also met with barren results. That this particular part of Bossier Parish will be further explored is indicated by actions of the Gulf Refining Co., which recently assembled a block of 14,000 acres centering around Section 31-23-13. This acreage is about 3 miles northeast of the Plain Dealing Oil Co.'s test and between this wildcat and the Carterville Field about 10 miles northeast.

Surprise Gasser

In the early part of 1931, Belchic & Laskey, operating as the Junior Oil Co., produced a surprise when their No. 1 Breard, Section 9-18-16, Caddo Parish, blew in with an initial flow of 35,000,000 feet of gas at 1,100 pounds pressure from 10 feet of sand at a total depth of 2,780 feet. The well is located north of the old Greenwood district, western Caddo Parish, near the East Texas line, where gas has been produced from two horizons. Numerous deep and shallow holes have been drilled in that territory in the past, on all sides of the new producing area, one of them a gasser by the Standard Oil Co. at 2,720 feet. The main body of the Greenwood gas area, which did not last long until salt water broke in, was much farther south and west. The only attempt to extend the producing area of this field during the past year was the same operator's No. 2 Breard in the adjoining Section 10-18-16, which was completed with an initial flow of 10,000,000 feet from 2,735 feet. The Louana Oil & Gas Co. has rigged up to drill a test on a large block of acreage adjoining the Belchic & Laskey block on the west, and it is possible that this area will experience more drilling in 1932.

That the open flow capacity of Louisiana's largest and most prolific gas area is holding up under its present rate is revealed by a semiannual report recently given out by the minerals division of the Louisiana Conservation Commission. This report states that the potential open flow of 832 gas wells in the Monroe Field is 4,522,123,000 feet daily and the open flow capacity of the 253 gassers in the Richland Field is 4,619,068,000 feet daily. The previous semiannual figures showed the open flow capacity of 828 wells in Monroe Field to be 4,539,279,000 feet and of 236 wells in Richland to be 5,006,758,000 feet.

Deep Gas Fields

The Rodessa Trinity gas field in northwestern Caddo Parish was developed from the discovery well to a total of seven big gassers during 1931. The proven producing area of this field is now 2½ miles long, running southwest and northeast, and about one-half mile wide. After R. W. Norton and others brought in the discovery well of this field in 1930, No. 1 Hill, Section 33-23-16, they sold their entire holdings to the United Gas Public Service Co., a subsidiary of Electric Bond & Share, which company has since developed the field. The first well of this company, its No. 1 French, Section 34-23-16, was completed in January, 1931, gauging 20,000,000 feet at 2,350 pounds rock pressure, in broken sandy Oolitic lime of the Trinity horizon at the 5,500-foot level. The largest well to date in Rodessa was No. 1 Wall, Section 33-23-16, with an initial open flow of 75,000,000 feet at 2,330 pounds pressure from a total depth of 5,522 feet. The smallest gasser of the seven completed was No. 1 Smith, Section 33-23-16, gauging less than 4,000,000 feet from a total depth of 5,690 feet or a depth 100 feet lower than No. 1 Bussa, less than one-half mile south in the same section. The latter well had an initial flow of 54,613,000 feet of gas, and there was a difference of only 8 feet in the surface elevations of the two tests. The Sugar Creek Field of Claiborne Parish, another Trinity gas area, has recently completed its seventh consecutive big gasser. This field, the discovery well of which was drilled by the Triangle Drilling Co., is now owned jointly by that company, the Standard Oil Co. of Louisiana and the United Gas Public Service Co. The latter company is processing the gas in a plant at Athens, 7 miles west of the field, with a daily capacity of 30,000,000 feet of gas. Only two wells were added to Sugar Creek production during 1931.

An important fact not to be overlooked is that all the wells already drilled to the pay zone have hit it at practically the same subsea depth and there is approximately 200 feet of productive closure in the Oolitic lime pay. There has been nothing drilled to date to limit the productive area of this field nor from the present wells can any determination be made. It is a general opinion, though, by operators of this district, that a deeper

NORTH LOUISIANA

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
CADDO (light):													
Daily average	8,132	8,165	7,772	7,425	7,242	7,149	6,815	6,129	6,166	6,070	6,123	5,947	
Month	252,092	228,620	240,932	222,750	224,502	214,470	211,265	189,999	184,980	188,170	183,690	184,357	2,526,127
CADDO (heavy):													
Daily average	2,762	2,808	2,776	2,774	2,759	2,710	2,543	1,632	1,436	1,432	1,665	1,671	
Month	85,622	78,624	86,056	83,220	85,529	81,300	78,833	50,592	43,080	44,423	49,950	51,801	819,030
HOMER:													
Daily average	3,355	3,363	3,365	3,289	3,225	3,106	2,975	2,699	2,803	2,783	2,762	2,809	
Month	104,005	94,164	104,315	98,670	100,285	93,180	92,225	83,669	84,090	86,273	82,860	87,079	1,110,815
HAYNESVILLE:													
Daily average	5,416	5,615	5,764	5,944	5,711	5,522	5,216	5,132	4,908	4,655	4,440	4,460	
Month	167,896	157,220	178,684	178,320	177,041	165,690	161,696	158,782	147,150	144,305	133,200	138,260	1,908,244
DE SOTO-RED RIVER:													
Daily average	2,771	2,753	2,709	2,674	2,679	2,590	2,481	2,360	2,254	2,182	2,157	2,106	
Month	85,901	77,084	83,979	80,220	83,049	77,700	76,911	73,160	67,620	67,642	64,710	65,286	903,262
ELM GROVE:													
Daily average	517	495	480	515	513	493	472	414	385	373	366	357	
Month	16,027	13,860	14,880	15,450	15,903	14,790	14,633	12,834	11,550	11,563	10,980	11,067	163,536
BELLEVUE:													
Daily average	572	592	553	562	575	440	82	.....	.....	.....	.....	.....	
Month	17,732	16,576	17,143	16,860	17,825	13,200	2,542	.....	.....	.....	.....	.....	101,878
COTTON VALLEY:													
Daily average	1,761	1,853	1,807	1,745	1,858	935	[illegible]	305	353	363	347	487	
Month	54,591	51,884	56,017	52,350	57,598	28,050	15,066	9,455	10,590	11,253	10,410	15,097	372,361
URANIA:													
Daily average	4,940	4,877	4,595	4,531	4,487	4,135	3,941	3,459	3,107	3,535	3,715	3,346	
Month	153,140	136,556	142,445	135,930	139,097	124,050	122,171	107,229	93,210	109,585	111,450	103,726	1,478,589
PLEASANT HILL:													
Daily average	405	410	461	447	426	403	376	370	354	347	365	353	
Month	12,555	11,480	14,291	13,410	13,206	12,090	11,656	11,470	10,620	10,757	10,950	10,943	143,428
ZWOLLE:													
Daily average	7,672	10,552	7,844	7,297	8,095	7,216	6,940	6,487	6,515	6,066	6,038	4,939	
Month	237,832	295,456	243,164	218,910	250,945	216,480	215,140	201,097	195,450	188,046	181,140	153,109	2,596,769
HOLLY:													
Daily average	893	705	633	565	539	466	483	455	390	392	374	372	
Month	27,683	19,740	19,623	16,950	16,709	13,980	14,973	14,105	11,700	12,152	11,220	11,522	190,367
SAREPTA-CARTERVILLE:													
Daily average	1,909	1,733	1,471	1,233	1,207	1,060	972	934	883	831	915	794	
Month	59,179	48,524	45,601	36,990	37,417	31,800	30,132	28,954	26,640	25,761	27,450	24,614	423,062
Daily average	41,105	43,921	40,230	39,011	39,328	36,226	33,782	30,366	29,556	29,030	29,267	27,641	34,897
Total 1931	1,274,255	1,229,788	1,247,130	1,170,330	1,219,106	1,086,780	1,047,242	941,346	886,680	899,930	878,010	856,871	12,737,468
Total 1930	1,163,554	1,138,396	1,271,465	1,258,500	1,226,701	1,200,630	1,253,113	1,280,393	1,194,060	1,296,203	1,322,400	1,338,549	14,943,964
Total 1929	1,114,171	990,024	1,103,986	1,069,200	1,097,121	1,068,960	1,110,172	1,125,486	1,037,250	1,224,717	1,147,200	1,196,879	13,291,166
Total 1928	1,369,146	1,313,555	1,369,115	1,411,890	1,383,054	1,272,040	1,306,433	1,246,200	1,177,920	1,196,669	1,163,400	1,155,091	15,367,493
Total 1927	1,589,122	1,474,004	1,589,711	1,511,250	1,469,710	1,435,020	1,751,376	1,748,067	1,567,320	1,591,347	1,506,210	1,469,950	18,703,087
Total 1926	1,343,788	1,288,000	1,511,219	1,556,580	1,830,705	1,809,180	1,780,175	1,761,513	1,703,190	1,801,224	1,696,411	1,689,665	19,771,640

penetration of the Trinity zone in Sugar Creek will result in an oil yield.

Upper Trinity Development

The development of gas from the upper Trinity in the Bethany gas district of Panola County, East Texas, has not met with the same success experienced by the other fields from which this production is obtained. The completion of the Arkansas-Louisiana Pipe Line Co.'s No. 2-A Brumble, B. C. Jordan Survey, in December, 1930, as a 41,000,000-foot gasser with 2,100 pounds rock pressure from 4,746 feet, started a drilling campaign to this horizon in that field. During 1931 six Trinity wells have been completed in the field, four of which had an average initial flow of 20,000,000 feet. One of these producers, the United Gas Public Service Co.'s No. 10 Werner, B. C. Jordan Survey, was also making about 400 bbls. of salt water daily. Two other deep tests resulted in only a small amount of gas with immense quantities of salt water, and they were abandoned. In fact, salt water seems to be the hazard to gas production from this depth in the Bethany Field, and is likely to be encountered even at the top of the producing zone. Results of deepening several tests from the Oolitic lime pay at the top of the Trinity to the lower horizons have been discouraging as no sand was encountered that would carry the pay for either oil or gas.

Zwolle Extension

A southeastern extension of 2½ miles to Zwolle was uncovered during March of last year with the completion of Merritt and others' No. 1 Byrd, Section 1-7-11, with an initial production of 1,200 bbls. daily from the 2,400-foot level. This discovery started an extensive drilling campaign in that vicinity with about the same percentage of successes as had prevailed in other hot spots of the field. Recently, two other semiwildcats have added considerable territory to this eastern area. In Section 12-7-11, a mile southeast of the Merritt well, Smitherman & Grigsby's No. 1 Gardner had an initial flow of 2,000 bbls. daily through 1-inch choke. The greatest extension for this southeastern flank developed from results of Lyons & Neely's No. 1 Clanan, Section 14-7-11, 2 miles southeast from the nearest production. The well flowed 65 bbls. daily through 2-inch tubing from a total depth of 2,539 feet. A western pool, 1½ miles southwest of Zwolle townsite production, was opened up during the year by the Stovall Drilling Co.'s No. 1 Nulton, Section 1-7-13. The well had an initial flow of 1,000 bbls. daily from 2,357 feet. This area was more successful than other sections of the field and completed seven consecutive producers without a dry hole. They were all closely grouped as offsets in the vicinity of the discovery well.

Results in Mississippi

Mississippi was one of the two districts in this division showing an increase in drilling operations during 1931. The records disclose that 18 counties were represented on the completion list for a total of 76 in comparison with explorations in 13 counties in 1930 for a total of 60 completions. The most active spot in the State was the Jackson gas field, divided between Hinds and Rankin Counties. This area shows a total of 51 completions resulting in 34 gas wells and 17 dry holes, practically all of the latter being semiwildcats which failed to extend the producing area of the field. The productive area, although extended southeast in Rankin County and north in Hinds County to some extent, has about reached its territorial limit. At the present time, the field consists of slightly less than 6,000 proven acres, with 65 producing wells, averaging an initial open flow of 34,000,000 feet of dry gas. The rock pressure has averaged from 900 to 1,000 pounds. Gas production in the Jackson Field comes from the top 5 to 7 feet of a chalk body that has a thickness of 339 to 438 feet. The average depth of the pay zone is 2,400 feet. The total open flow of this field is estimated to be 1,666,800,000 feet with a reserve of over 25,000,000,000 feet. The original gas area in Mississippi in Monroe County, near Amory, has failed to develop into a commercial field of any proportion. Only two producers were reported from that area during the past year with a combined initial flow of 2,500,000 feet.

Wildcatting in the state has been carried on in 16 counties with no particular encouraging results, except in Clarke County. In that area, the Gulf Refining Co.'s No. 1-A Long Bell Lumber Co., Section 10-2n-16e, cored 8 feet of sand from 3,692 to 3,700 feet. After setting 6-inch casing, a test developed 30 feet of 16.8 gravity oil and 50 feet of salt water. The formation where the show was encountered was identified as the upper Eutaw which corresponds to the Blssom sand in North Louisiana. After failing to make a commercial producer at this depth, the hole was deepened to 4,775 feet in the Tuscaloosa formation without another show anywhere along the log. It was junked at this depth after sidetracking several fourbles of drill stem lost in the hole at 4,651 feet. Although failing to make a commercial well, the test resulted in the best oil show yet obtained in Mississippi, and will greatly stimulate wildcatting in that state.

The Year in East Texas

The border counties of East Texas, composed of Bowie, Cass, Harrison, Marion, Panola and Shelby, experienced a decided increase in wildcat operations during the past year. During 1930 there were only 35 completions in these counties, 29 of which were from the proven gas area of Panola County, leaving a total of only 6 wildcat completions. The 1931 records reveal a total of 57 completions in these counties, 42 of them outside of Panola. All of these wildcats had barren results with the exception of the Chapman gasser in northeastern Shelby County.

Arkansas Reviewed

Although Arkansas experienced desultory wildcatting throughout the past year with 21 counties represented in the completion list, the state had far less activity than has been its lot since oil was discovered within its boundaries. Most of the wildcat tests have made little or no progress, being shut down a greater part of the year without funds to complete the holes to the anticipated depths. In Crawford, Franklin and Johnson Counties, where gas had already been found, only five wells were completed during the year, four of them producers for a total initial open flow of 71,300,000 feet. One test in Crawford County was a failure. Sebastian County was added to the list of gas areas with one well, gauging 3,250,000 feet. One other test in this county was dry.

The most interesting operation in Arkansas during the past year was the Lion Oil Refining Co.'s deep test in the Smackover Field of Union County. The well, listed as No. 9-A G. P. Hayes, Section 4-16-15, has reached a total depth of 7,255 feet with the bit in rock salt which was first encountered at 5,974 feet, or a total of 1,261 feet of this hard salt formation. After drilling through red beds around 3,600 feet, reports from the well reveal that 5 feet of sand showing oil was cored from 3,999 to 4,004 feet. Nine-inch casing was set at 3,998 feet and a later core from 4,017-25 feet showed oil and salt water sand. Constant cores were taken to 4,800 feet without developing anything of interest. Two feet of salt water sand with streaks of heavy dead oil was cored from 4,858-60 feet, and a test in hard gray lime at 5,236 feet was barren of results. Another core of brown sandy lime from 5,633-39 feet showed more dead oil and salt water. The next 300 feet to the top of the salt rock was hard gray lime with intermittent streaks of brown color. The test at the present time has drill stem stuck at 7,255 feet. This is the deepest test drilled in the state to date and will probably develop into one of the deepest tests drilled in this part of the Mid-Continent areas.

NORTH LOUISIANA
Completions by Parishes

	Comp.	Prod.	Dry	Gas*
Bienville	5	0	5	0
Bossier	12	0	5	7
Caddo	22	385	8	8
Claiborne	6	0	5	1
Concordia	7	0	6	1
DeSoto	12	40	11	0
LaSalle	3	15	2	0
Morehouse	1	0	0	1
Natchitoches	3	0	3	0
Ouachita	5	0	0	5
Rapides	1	0	1	0
Red River	1	0	1	0
Richland	52	0	8	44
Sabine	107	22,402	63	0
Tensas	3	0	3	0
Union	12	0	3	9
Vernon	2	0	2	0
Webster	2	0	2	0
West Carroll	1	0	1	0
Winn	1	0	1	0
Total 1931	258	22,842	130	76
Total 1930	746	55,257	279	254
Difference	488	32,415	149	178

*Gas production—Bossier, 81,374,500 feet; Caddo, 266,372,290; Claiborne, 29,279,000; Concordia, 7,000,000; Morehouse, 19,368,000; Ouachita, 26,273,212; Richland, 1,172,780,533; Union, 57,926,000; total, 1,660,373,534 feet.

Completions by Months

	Comp.	Prod.	Dry	Gas
January	31	9,190	15	8
February	32	2,175	17	11
March	25	1,665	17	4
April	27	590	14	8
May	25	2,553	11	9
June	25	1,390	11	6
July	16	2,005	6	6
August	14	1,787	5	6
September	13	0	8	5
October	21	1,117	9	4
November	13	250	9	3
December	16	120	8	6
Total	258	22,842	130	76

ARKANSAS
Completions by Counties

	Comp.	Prod.	Dry	Gas*
Chicot	1	0	1	0
Clay	1	0	1	0
Columbia	1	0	1	0
Crawford	2	0	1	1
Dallas	2	0	2	0
Drew	1	0	1	0
Franklin	1	0	0	1
Garland	1	0	1	0
Grant	1	0	1	0
Hot Springs	1	0	1	0
Johnson	2	0	0	2
Lafayette	3	0	3	0
Little River	1	0	1	0
Logan	1	0	1	0
Miller	6	0	6	0
Ouachita	9	238	3	0
Pike	1	0	1	0
Pope	2	0	2	0
Sebastian	2	0	1	1
Union	19	3,890	6	0
Washington	2	0	2	0
Total 1931	60	4,128	36	5
Total 1930	127	6,214	69	12
Difference	67	2,086	33	7

*Gas production — Crawford, 20,000,000 feet; Franklin, 8,500,000; Johnson, 42,800,000; Sebastian, 3,250,000; total, 74,550,000 feet.

Completions by Months

	Comp.	Prod.	Dry	Gas
January	9	105	5	2
February	5	215	3	1
March	5	390	2	1
April	11	343	4	1
May	8	250	7	0
June	4	175	3	0
July	6	500	5	0
August	0	0	0	0
September	3	0	3	0
October	2	1,450	0	0
November	4	50	3	0
December	3	50	2	0
Total	60	4,128	36	5

(Continued on Page 104)

ARKANSAS

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
EL DORADO:													
Daily average	3,907	3,825	3,066	3,636	3,620	3,554	3,507	3,188	3,169	3,070	3,263	3,251	
Month	121,117	107,100	95,046	109,080	112,220	106,620	108,717	98,828	95,070	95,170	97,890	100,781	1,247,639
SMACKOVER (light):													
Daily average	4,513	4,478	4,325	4,170	4,241	4,079	3,747	3,144	3,192	3,125	3,111	3,162	
Month	139,903	125,384	134,075	125,100	131,471	122,370	116,157	97,464	95,760	96,875	93,330	98,022	1,375,911
SMACKOVER (heavy):													
Daily average	34,035	33,494	32,220	31,946	31,492	30,106	28,615	26,663	26,712	26,496	25,923	23,401	
Month	1,055,085	937,832	998,820	958,380	976,252	903,180	887,065	826,552	801,360	821,376	777,690	725,431	10,669,024
STEPHENS:													
Daily average	866	847	853	845	853	795	625	615	651	705	679	671	
Month	26,846	23,716	26,443	25,350	26,443	23,850	19,375	19,065	19,530	21,855	20,370	20,801	273,644
NEVADA COUNTY:													
Daily average	1,014	997	992	994	995	1,100	1,162	1,023	1,095	1,118	1,165	1,137	
Month	31,434	27,916	30,752	29,820	30,845	33,000	36,022	31,713	32,850	34,658	34,950	35,247	389,207
LISBON:													
Daily average	793	852	736	768	723	716	617	514	602	577	581	562	
Month	24,738	24,696	22,816	23,040	22,413	21,480	19,127	15,934	18,060	17,887	17,430	17,422	245,043
BRADLEY:													
Daily average	59	58	57	53	51	.....	.....	.....	.....	.....	.....	.....	
Month	1,829	1,624	1,767	1,590	1,581	.....	.....	.....	.....	.....	.....	.....	8,391
CHAMPAGNOLLE:													
Daily average	4,654	4,483	3,157	2,955	2,973	2,712	2,455	2,217	2,165	2,017	2,085	2,067	
Month	144,274	125,524	97,867	88,650	92,163	81,360	76,105	68,727	64,950	62,527	62,550	64,077	1,028,774
MOUNT HOLLY:													
Daily average	65	59	772	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Month	2,015	1,652	23,932	.....	.....	.....	.....	.....	.....	.....	.....	.....	27,599
URBANA:													
Daily average	894	966	1,217	1,707	1,706	1,753	807	235	360	711	883	657	
Month	27,714	27,048	37,727	51,210	52,886	52,590	25,017	7,285	10,800	22,041	26,490	20,367	361,175
Daily average	50,805	50,089	47,395	47,074	46,654	44,815	41,535	37,599	37,946	37,819	37,690	34,908	42,312
Total 1931	1,574,955	1,402,492	1,469,245	1,412,220	1,446,274	1,344,450	1,287,585	1,165,569	1,138,380	1,172,389	1,130,700	1,082,148	15,626,407
Total 1930	1,817,685	1,608,376	1,817,871	1,724,460	1,659,895	1,704,060	1,713,680	1,700,102	1,583,280	1,636,552	1,557,870	1,590,951	20,114,782
Total 1929	2,453,526	2,154,194	2,303,734	2,188,650	2,220,158	2,112,270	2,137,047	2,086,083	1,959,720	2,000,027	1,911,060	1,917,071	25,443,570
Total 1928	2,791,922	2,571,575	2,687,948	2,472,600	2,843,847	3,075,911	2,792,139	2,711,787	2,540,070	2,652,848	2,476,080	2,521,571	32,137,934
Total 1927	4,676,469	3,574,256	3,853,920	3,378,240	3,493,669	3,365,760	3,406,683	3,242,600	3,032,970	3,117,298	2,906,760	2,962,750	40,411,375
Total 1926	5,489,604	4,756,836	5,115,837	5,127,510	5,432,939	5,064,760	5,019,892	4,878,191	4,603,230	4,625,138	4,299,480	4,266,189	58,729,606

Trend of Average Retail Price Turns

Improvement in Last Six Months of 1931 Shown Despite Unsettled Conditions and Drop in Most Other Commodities

By W. T. Ziegenhain

As 1931 drew to a close, the industry was able to point to an improvement in its average retail gasoline price compared to the low on June 1, but this period remains as the worst six months it has ever witnessed. This statement is based upon the average of the service station gasoline prices in 50 scattered cities in the United States, taken on the first of each month, the price changes being made as shown by the accompanying table.

In making these compilations, only the regular motor grade of gasoline was considered and no attempt was made to weight the influence of prices posted for the premium or third grades. While no definite information is available, it is probable that were the effect of the prices on these other grades included to make a composite, and were recognition made of the relative volume of each sold, that the average would be less encouraging. This is due to the increasing volume of the third-grade gasoline being moved at the expense of a decrease in the volume of the regular and the premium grades.

Since these factors have entered the business so strongly, it is difficult to state the true relationship between the revenue the marketing branch of the industry received in the past six months and that received the first six months.

Similarly, to make an exacting comparison, it would be necessary to recognize rebates and discounts granted by many companies and at various times especially to the larger purchasers.

The average service station price in the 50 cities on January 1, 1932, was 12.9 cents. A year ago this average was 14.56 cents, a decrease of about 1½ cents. However, on January 1, 1931, the average was considered abnormally low and might be compared to that on January 1, 1930, of 17.23 cents and for the first of the same month in 1929 of 18.32 cents.

The average of the net prices for 1931 is shown as 13.09 cents, the lowest in the industry's history by a very substantial margin, the next lowest average being that shown for 1930 which was 16.33 cents.

Changes by Districts

Of the various areas into which the cities have been grouped, the Pacific states show the largest decrease for the year. On January 1, 1932, the average of the net service station prices in this group was 13.83 cents, the same as it was on July 1, 1931, but about 2¾ cents short of the average at the beginning of the year.

The area in which the next greatest drop occurred was that of the midwestern states. Here the average on January 1, 1932, is shown as 15.44 cents, an improvement over the July 1 average of nearly 1 cent but slightly more than 2 cents short of the average a year ago.

Prices More Dependent

There were no areas in which a higher average price is shown on January 1, 1932, than that of January 1, 1931. Quick transportation and the overlapping of marketing territories have removed the chance of prices being abnormally reduced or advanced in one area while an opposite change is made in another. Marketing has developed until there is a national and even an international consistency in price changes and quotations cannot be successfully maintained in any area when a low price situation exists in another area. The experiences of the past year serve as an example.

Probably the two groups which may be considered least susceptible to outside price changes are the Pacific Coast states and the middle western states. Nevertheless, these are the two groups in which the largest decrease is shown in the retail prices for the year. So, even though low retail prices in the Middle West and East are said to be the result of excess crude production in the East Texas fields, the results were as damaging to the western markets as to the Midwest and eastern markets.

Loss of Revenue

As the result of the lower prices in all areas, it may be roughly estimated that the industry's loss from the sale of gasoline alone amounted to $590,000,000 for the year. This represents a daily loss in revenue of $1,600,000, a very substantial reduction to be the result of simply lowering the average gasoline price 3.24 cents.

While the loss due to price reductions shown here applies to gasoline alone, similar recessions were made on other refinery products, so the actual loss due to price changes will reach close to $1,000,000,000 for the year.

State Taxes

Gasoline taxes show little change for the last half of 1931 but in the first six months there were several important increases which accounted for raising the average from 3.83 cents on January 1 to 4.07 cents at the close of the year. Two states adopted a 7-cent tax in that time and two adopted a 6-cent tax.

Taken in the order in which tax changes became effective in 1932, Arkansas leads the list, when on March 1 the tax was advanced from 5 cents to 6 cents. Oklahoma followed on March 26 by making effective a 1-cent emergency tax which brought the state levy from 4 cents to 5 cents. This emergency tax continued in force until January 1, 1932, at which time the old 4-cent levy was resumed. On April 1 North Carolina advanced its tax levy from 5 cents to 6 cents and on the same date Wisconsin and Washington also increased their taxes. The Wisconsin tax was increased from 2 cents to 4 cents and the Washington levy was raised from 3 cents to 5 cents. On May 1 the Massachusetts tax was advanced from 2 cents to 3 cents and on May 12 Utah increased its tax from 3½ cents to 4 cents. On July 1 the Tennessee tax was advanced from 5 cents to 6 cents and on December 20 was again advanced, at which time a 7-cent levy was posted. On August 1 Florida also posted a 7-cent tax, the previous tax being 6 cents. On No-

TREND OF GASOLINE SERVICE STATION PRICES

AVERAGE SERVICE STATION PRICES IN CENTS IN 50 REPRESENTATIVE CITIES, EXCLUSIVE OF TAXES

	1924	1925	1926	1927	1928	1929	1930	1931	1932
January 1	16.89	16.45	18.82	20.25	16.41	18.32	17.23	14.56	12.90
February 1	20.20	19.37	18.91	20.16	16.38	17.59	16.96	14.83	.....
March 1	20.67	21.70	19.89	19.43	16.80	17.21	16.28	14.86	.....
April 1	21.45	21.30	21.14	18.79	17.16	17.38	15.92	13.68	.....
May 1	21.48	20.99	21.13	17.97	17.47	17.48	16.95	12.40	.....
June 1	21.28	20.74	22.13	17.25	17.56	18.32	17.01	12.21	.....
July 1	20.42	21.99	22.22	17.38	17.56	18.48	16.56	12.46	.....
August 1	19.19	22.02	22.19	17.39	18.12	18.22	16.47	12.41	.....
September 1	18.45	19.45	22.09	17.13	18.40	18.22	16.26	12.21	.....
October 1	16.52	18.41	21.58	16.81	18.70	18.32	15.93	12.34	.....
November 1	16.29	18.20	20.58	16.72	18.05	17.84	15.41	12.32	.....
December 1	16.41	18.45	20.10	16.71	18.39	17.51	14.96	12.89	.....
Average	19.10	19.92	20.92	18.01	17.63	17.91	16.33	13.09	.....

COMPARISON OF NET SERVICE STATION PRICES JANUARY 1 AND JULY 1, 1931, AND JANUARY 1, 1932, ACCORDING TO GEOGRAPHIC GROUPINGS

Atlantic and New England States

	Jan.1, 1931	July 1, 1931	Jan.1, 1932
Augusta, Me.	14.8	14.8	14.8
Manchester, N. H.	14.4	14.4	14.4
Burlington, Vt.	15.3	15.3	15.3
Hartford, Conn.	17.5	14.6	15.5
Springfield, Mass.	14.9	14.5	12.5
New York, N. Y.	13.3	13.3	12.3
Philadelphia, Pa.	19.0	13.0	12.0
Providence, R. I.	12.7	12.5	10.5
Newark, N. J.	12.5	11.7	12.7
Baltimore, Md.	12.2	11.4	12.4
Dover, Del.	16.0	13.0	13.0
Average	14.78	13.50	13.22

Central

	Jan.1, 1931	July 1, 1931	Jan.1, 1932
Fargo, N. D.	16.9	13.9	14.9
Huron, S. D.	13.5	12.3	13.3
Wichita, Kans.	10.8	9.8	10.8
Omaha, Neb.	14.25	8.9	11.9
Tulsa, Okla.	13.0	8.0	12.0
Dallas, Tex.	13.0	12.0	12.0
Little Rock, Ark.	13.0	10.0	12.0
Kansas City, Mo.	11.9	10.9	11.9
Des Moines, Iowa	12.5	11.5	9.9
Duluth, Minn.	14.5	12.5	13.5
Milwaukee, Wis.	13.0	11.1	12.5
Chicago, Ill.	14.0	11.0	12.0
Detroit, Mich.	9.5	11.8	11.5
Indianapolis, Ind.	13.9	11.3	12.3
Cleveland, Ohio	13.0	12.0	14.0
Average	13.12	11.15	12.14

Southeastern

	Jan.1, 1931	July 1, 1931	Jan.1, 1932
Norfolk, Va.	12.8	11.5	12.5
Charleston, W. Va.	13.5	12.2	13.7
Louisville, Ky.	13.0	12.0	12.0
Memphis, Tenn.	14.0	9.0	10.5
Atlanta, Ga.	15.0	12.0	13.0
Charlotte, N. C.	14.3	11.0	11.0
Charleston, S. C.	12.3	11.5	12.5
Natchez, Miss.	15.0	15.0	10.0
Birmingham, Ala.	14.0	11.0	13.0
New Orleans, La.	12.5	10.5	8.5
Jacksonville, Fla.	13.0	12.0	13.0
Average	13.58	11.66	11.80

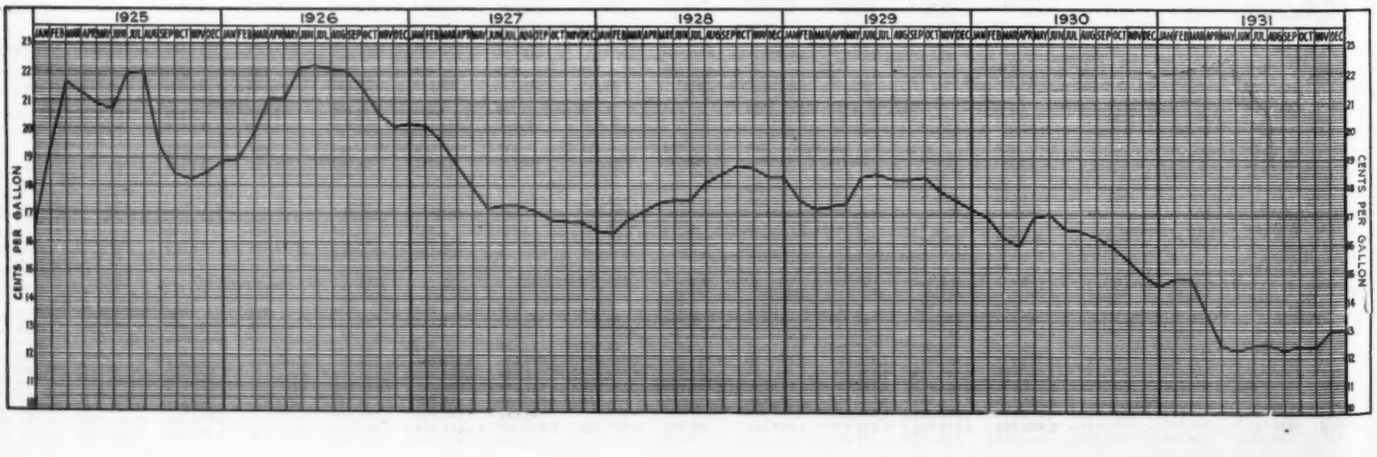
Midwestern

	Jan.1, 1931	July 1, 1931	Jan.1, 1932
Helena, Mont.	18.0	18.0	19.0
Boise, Idaho	20.5	16.0	19.0
Casper, Wyo.	16.0	14.0	14.0
Reno, Nev.	22.0	16.5	16.0
Salt Lake City, Utah	18.5	13.0	16.5
Denver, Colo.	11.0	13.0	11.0
Phoenix, Ariz.	19.5	11.0	12.0
Albuquerque, N.Mex.	15.0	15.0	16.0
Average	17.6	14.56	15.44

Western Coast

	Jan.1, 1931	July 1, 1931	Jan.1, 1932
San Francisco, Calif.	13.5	13.5	13.5
Portland, Ore.	16.0	14.0	14.0
Seattle, Wash.	13.5	14.0	14.0
Average	17.67	13.83	13.83

AVERAGE FILLING STATION PRICE FREE OF TAX IN 50 CITIES OF THE UNITED STATES



vember 1 Mississippi raised its tax from 5 cents to 5½ cents.

Included in the list of 50 cities are some which call for the payment of a city, county or parish tax and these are shown. One change was made during the year in these taxes, namely, the withdrawal of the 1-cent city tax in Albuquerque, N. M., on October 16.

CHANGES IN TIDE WATER SUPERVISORY PERSONNEL

NEW YORK, Jan. 25.—The Tide Water Oil Co. announces the following changes in the supervisory personnel of the Bayonne refinery:

R. D. Rogers' title has been changed from manager to general superintendent, in charge of the operating division of the refinery.

James J. McGrath, formerly general superintendent, has been transferred to the New York office, and assigned to new duties. H. S. Chase, formerly chief refinery engineer, becomes assistant general superintendent. He will be responsible for the operation of the processing, pumping and shipping departments, the East Jersey Railroad & Terminal Co., and, in Mr. Ellsberg's absence, will be in charge of the engineering division, which consists of the design and drafting and estimating department.

F. S. Turbett becomes supervisor in charge of sales co-ordination and special cost analysis work. F. O. Campbell, formerly superintendent of the refined oil and cracking departments, becomes superintendent of maintenance department in charge of maintenance and construction, mechanical shops, steam power plant utilities, material warehouse, and fire protection.

George F. Gast's title has been changed to maintenance engineer. H. C. Dawkins becomes general foreman of all maintenance and construction work. F. W. Keebler continues as superintendent of the processing department, assisted by George C. Caine as assistant superintendent. The pumping and shipping section, formerly coming under the processing department, will be made a separate department. The processing department will have added to its organization the compounding, blending and grease manufacturing section, now included in the package manufacturing and shipping department. N. F. LeJeune will continue as foreman of this section.

EXECUTIVES GET OPTIONS

NEW YORK, Jan. 25.—The S. R. Dresser Manufacturing Co. has notified the New York Stock Exchange that H. N. Mallon, president, and M. N. Davis, vice president, have each been given an option to purchase at any time before December 31, 1933, 2,000 shares of class "B" stock at $17.50 a share.

GASOLINE SERVICE STATION PRICES IN EFFECT IN 1931, EXCLUSIVE OF TAXES, IN 50 REPRESENTATIVE CITIES WITH AMOUNT AND DATE OF CHANGES, ALSO HIGH AND LOW PRICES FOR 1929, 1930 AND 1931, WITH GASOLINE TAXES IN EFFECT JANUARY 1, 1930, 1931 AND 1932

	Prices Jan. 1, 1931	Price changes during 1931										Prices Jan. 1, 1932	High and low prices 1931		High and low prices 1930		Taxes Jan. 1, 1930	Taxes Jan. 1, 1931	Taxes Jan. 1, 1932
Birmingham, Ala.	14 0	1/21 17.0	2/11 14.0	6/9 13 0	6/24 11.0	7/21 9.0	7/29 10.0	9/4 13 0	9/12 12.0	10/3 10 5	11/16 13.0	13.0	17 0	9.0	16 0	11.0	*4 0	*4.0	*6.0
Phoenix, Ariz.	19.5	1/7 17.5	4/16 15 0	4/11 13.0	5/29 10.5	6/11 11.0	7/3 12.5	9/22 11.0	11/16 12 0	....	....	12.0	19.5	10.5	15.5	13.0	4.0	4 0	5.0
Little Rock, Ark.	13.0	2/7 12.0	3/16 14.5	3/26 10.5	3/13 12.0	4/11 11.5	5/20 11.0	5/26 10.0	8/7 10 5	8/26 11.0	9/8 9/23 11/5 12 5 11 5 12 0	12.0	16 5	10.0	13.0	8 0	5.0	5 0	6.0
San Francisco, Calif.	18.0	2/25 16 0	3/7 14 0	3/11 12.0	3/18 9.0	4/24 8.0	6/19 13 5	....	....	....	....	13.5	18.0	8 0	20.0	15.5	3.0	3.0	3.0
Denver, Colo.	11.0	2/3 10.0	2/25 12.0	3/18 13.0	3/28 14.0	6/3 13.0	8/1 14.0	9/2 15.0	9/22 13 0	11/30 11.0	....	11.0	15.0	10.0	14 0	9.0	4.0	4.0	4.0
Hartford, Conn.	17.5	2/11 14.5	6/7 13.5	8/16 13.3	8/31 12.5	9/3 13.5	10/7 12.0	12/5 13.5	12/9 15.5	....	....	15.5	17 5	12.0	16.0	13.5	2.0	2.0	2.0
Dover, Del.	16.0	3/11 15.0	3/18 14.0	6/15 13.0	7/17 12.0	7/29 11.0	10/6 12.0	11/30 13.0	....	....	....	13.0	16.0	12.0	16.0	14.0	3 0	3 0	3.0
Jacksonville, Fla.	13.0	1/14 15.0	3/11 13.0	4/27 11.0	6/1 12.0	7/23 10.0	8/19 11.0	8/25 8.0	10/5 12.0	10/10 11 0	10/16 10/28 11/16 12/18 9 0 12.0 14 0 13.0	13.0	15 0	9.0	16 0	11 0	6.0	6 0	7.0
Atlanta, Ga.	15.0	1/19 16.0	3/11 14.0	4/8 12.0	6/23 10.0	7/21 8.0	8/19 10.0	10/2 12.5	10/3 10/27 12 0 11.5	11/16 13.0	....	13.0	16.0	8 0	16.0	13 0	6.0	6 0	6.0
Boise, Idaho	20.5	5/15 16.0	6/29 17.0	7/18 17.5	7/23 16.5	7/30 16 0	8/4 18.5	9/4 19 5	9/22 11/24 18.5 19 0		....	19.0	20 5	16.0	19.5	17.5	4 0	5.0	5.0
Peoria, Ill.	14.4	3/5 12.4	4/11 11.4	....	11/6 12.4	12/10 11.0	....	....	....	....	....	11.0	14.4	11 0	16.2	12 0	3.0	3 0	3.0
Chicago, Ill.	14.0	3/5 12.0	4/11 11.0	8/13 9.0	8/14 8.0	8/25 11.0	11/6 12.0	....	....	....	....	12.0	14.0	8 0	15.0	13.0	3.0	3 0	3.0
Indianapolis, Ind.	13.9	1/3 14.3	3/5 12.3	4/11 11.3	11/6 12.3	....	....	....	....	....	....	12.3	13 9	11 3	16 2	12 9	4 0	4.0	4.0
Des Moines, Iowa	12.5	1/3 14.5	3/5 12.5	4/17 11.5	9/19 10.4	11/6 10.5	12/5 9.9	....	....	....	....	9.9	14.5	9.9	16.5	12 5	3.0	3.0	3.0
Wichita, Kans.	10.8	4/11 9.8	11/6 10.8	....	....	....	....	....	....	....	....	10.8	10.8	9.8	14.8	11.8	3.0	3 0	3.0
Louisville, Ky.	13 0	3/12 12 0	....	10/10 12 0	10/21 11.0	11/6 12.0	....	....	....	....	....	12.0	13.0	11.0	16 0	11.0	5 0	5.0	5.0
New Orleans, La.	12.5	2/7 11.5	3/3 13.5	3/13 12.0	4/2 11.0	4/11 10 5	7/30 8 5	8/7 9 0	8/13 8 5	9/8 11.0	9/10 9/14 11/5 11/7 9.5 8.5 9 5 8 5	8 5	13 5	8 5	11 5	7.5	*5.0	*6.0	*6.0
Augusta, Me.	14.8	....	....	....	....	....	....	....	....	....	....	14 8	14.8	14 8	16.0	13 8	4 0	4 0	4.0
Baltimore, Md.	13.2	4/9 11.9	6/15 11.4	7/7 10.4	9/4 11.4	11/18 11 5	12/1 12.4	....	....	....	....	12.4	12 4	10.4	15.0	11.2	4.0	4.0	4.0
Springfield, Mass.	14.9	3/11 14 5	7/7 13 0	8/16 14 0	8/31 11 5	9/3 12 5	10/16 10 0	10/22 11.0	12/8 12 5	....	....	12.5	14 9	10.0	16 0	12.9	2.0	2.0	3.0
Detroit, Mich.	9.5	1/3 14 8	2/4 13 8	3/5 12.8	4/11 11 8	7/20 8.3	7/27 7.3	8/25 11.8	9/28 11.5	....	....	11.5	14.8	7.3	16 8	10 3	3.0	3.0	3.0
Duluth, Minn.	14.5	1/3 15 5	3/5 13.5	4/11 12.5	11/6 13 5	....	....	....	....	....	....	13.5	15.5	12 5	17.5	14 5	3 0	3.0	3.0
Jackson, Miss.	12.0	1/21 15.0	3/4 12.0	3/5 11.0	3/24 9 0	4/8 8 0	5/17 13.0	6/26 11 0	7/8 9 5	7/28 8.0	8/20 9/4 9/24 10/7 11/16 12/9 12/18 11.0 12.0 11.5 10.5 12.5 11.0 10.0	10.0	15.0	8.0	15.5	13 0	5.0	5.0	5.5
Kansas City, Mo.	11.9	1/3 13.9	3/5 11.9	4/11 10.9	11/6 11.9	....	....	....	....	....	....	11 9	13.9	10 9	15.9	11.9	*3.0	*3.0	*3.0
Helena, Mont.	18.0	8/6 19.0	9/22 18 0	11/7 19.0	....	....	....	....	....	....	....	19.0	19.0	18 0	20.5	15.0	5 0	5.0	5.0
Omaha, Nebr.	14 25	3/5 13.25	4/20 12.25	4/30 8.9	7/4 12 25	11/7 11.9	....	....	....	....	....	11.9	14 24	8.9	16 25	13 25	4.0	4.0	4.0
Reno, Nev.	22 0	1/7 20.0	1/19 18.0	1/20 16.0	3/18 15.0	4/4 16 0	6/19 17 5	6/22 16.5	12/29 16 0	....	....	16.0	22 0	15.0	24 0	20.0	4 0	4.0	4.0
Newark, N. J.	12 5	4/9 12.2	6/15 11.7	7/7 10.7	9/5 11.7	11/18 12.2	12/1 12 7	....	....	....	....	12.7	12 7	10.7	15 0	10.5	2.0	3 0	3.0
Albuquerque, N. Mex.	15 0	7/11 14.0	3/24 15.0	10/14 16.0	10/17 15.0	11/7 16 0	....	....	....	....	....	16.0	16.0	14 0	16.0	9.0	5.0	5.0	5.0
New York, N. Y.	13.3	9/3 14.3	12/8 13.3	....	....	....	....	....	....	....	....	12 3	14.3	12 3	14.3	12 3	2 0	2.0	2.0
Charlotte, N. C.	14.3	3/12 12.0	4/1 13.0	4/18 14.0	6/15 13.5	6/20 11.0	7/20 12.5	8/8 10.0	8/24 12 5	9/5 13 5	9/15 10/2 10/23 11/11 12/1 12/10 11.5 11.0 13.5 11.5 12.5 11.0	11.0	14 3	10 0	15.3	12.0	5.0	5.0	5.0
Fargo, N. D.	16.9	2/4 14.0	3/5 14.3	4/11 12.0	4/22 13.9	11/6 14.9	....	....	....	....	....	14.9	16 9	10.0	18 9	15.3	3.0	3.0	3.0
Cleveland, Ohio	13 0	2/14 11.0	3/2 13.0	3/5 13 0	6/18 11.0	7/6 10.0	8/1 11 0	8/19 12 0	8/22 13 0	9/2 14.0	11/9 14.0	14.0	13 0	10.0	16.0	12.0	4 0	4.0	4.0
Tulsa, Okla.	13 0	2/28 11.0	....	....	4/28 8.0	5/4 6.0	5/15 7.0	6/23 8.0	7/17 9 0	7/30 10 0	11/4 12/23 11.0 12.0	12.0	13.0	7.0	12 0	9.0	4.0	4.0	4.0
Portland, Ore.	16 0	1/7 18 5	3/7 14.5	3/11 12.5	3/18 11.5	4/1 10.5	4/13 8.5	6/19 14 0	....	....	....	11.0	18.5	8 5	20 5	15 5	4 0	4.0	4.0
Philadelphia, Pa.	19.0	3/11 15.0	3/16 14.0	6/15 13.0	7/17 12.0	7/29 11.0	8/3 10 0	9/10 11.0	9/26 10 0	11/9 11.0	11/14 11/23 11/30 10.0 11 0 12 0	12.0	19 0	10.0	16 0	14.0	4.0	3.0	3.0
Providence, R. I.	12 7	3/11 13.7	6/26 12.5	6/7 11.0	8/16 13.5	8/31 10.7	9/3 11.7	9/10 11.1	10/27 10.5	....	....	10 5	13 7	10.5	16 0	10 7	2 0	2.0	2.0
Charleston, S. C.	12 3	4/9 12 0	6/15 11.5	9/5 11.5	12/1 12.5	....	....	....	....	....	....	12 5	12 5	11 5	15 0	11.3	6.0	6.0	6.0
Huron, S. D.	13 5	1/3 15.3	1/17 13.5	3/5 13.3	4/11 12.3	11/6 13.3	....	....	....	....	....	13.3	15 3	12 3	17.3	13.5	4 0	4.0	4.0
Memphis, Tenn.	14.0	2/7 13.0	3/13 12.0	4/2 11.0	5/9 9.0	8/7 9 5	8/15 11.5	9/8 12 5	9/23 11.5	10/14 10.5	11/5 11/11 12/31 11.0 11.5 10 5	10.5	14 0	9.0	13 0	9.0	5.0	5.0	7.0
Dallas, Tex.	13 0	2/9 14.0	4/5 13 0	7/2 10 0	11/7 11.0	11/24 13 0	....	....	....	....	....	12 0	14.0	10 0	13 0	10.0	4.0	4.0	4.0
Salt Lake City, Utah	18 5	3/7 17.5	3/25 13.5	4/28 16.5	6/1 14.5	6/26 13.0	7/17 10.0	7/30 16.5	9/4 17.5	9/22 16 5	....	16.5	18.5	10 0	17.5	15.5	3 5	3.5	4.0
Burlington, Vt.	15.3	....	....	....	....	....	....	....	....	....	....	15 3	15 3	15.3	16 3	13 6	4 0	4.0	4.0
Norfolk, Va.	12 8	4/9 12.0	6/15 11.5	7/7 10 5	9/5 11.5	11/18 12 0	12/1 12.5	....	....	....	....	12.5	12 8	10.5	15.0	11.3	5.0	5.0	5.0
Washington, D. C.	12 7	4/9 12.4	6/15 11 9	7/7 10.9	9/5 11 9	11/18 12.4	12/1 12 9	....	....	....	....	12.9	12 9	10.9	15.0	11.7	2.0	2.0	2.0
Charleston, W. Va.	13 5	4/9 13.2	6/15 12 7	7/7 11.7	9/5 12.7	11/28 13.2	12/1 13.7	....	....	....	....	13.7	13.7	11 7	15 0	12.5	4 0	4.0	4.0
Milwaukee, Wis.	13 0	1/3 14 1	3/5 12.1	4/11 11.1	11/6 12.1	....	....	....	....	....	....	12.1	14.1	11.1	16.1	13.1	2 0	2.0	4.0
Casper, Wyo.	16.0	3/6 14 0	9/23 13.0	11/7 14.0	....	....	....	....	....	....	....	14.0	16.0	13.0	15.0	13 0	4.0	4.0	4.0
Seattle, Wash.	18.5	3/7 14 5	3/11 12 5	3/18 9.0	4/4 8 0	6/19 14.0	....	....	....	....	....	14.0	18.5	9.0	20.5	15.5	3.0	3.0	5.0
Minneapolis, Minn.	14 2	1/7 15.2	3/5 13.2	4/11 12.2	9/15 11.4	....	....	....	....	....	....	11.4	15 2	11.4	17 2	13.0	3 0	3.0	3.0
Average price †	14 52	....	....	....	....	....	....	....	....	....	....	12.90	15.31	10.89	17.44	12.52	3.77	3.83	4.07

*Includes 1-cent city or parish tax.

No New Pools in Rocky Mountain Area

Hobbs Pool in New Mexico Partly Developed Under Proration and an Important Gas Field Is Opened in Montana. Colorado Extensions

By Tolbert R. Ingram

Drilling operations in the Rocky Mountain area in 1931 reflected the general trend of business with a decrease of approximately 58 per cent in the number of wells completed, as compared with 1930, and 65 per cent as compared with 1929. In the five states comprising New Mexico, Colorado, Wyoming, Montana and Utah, there were 254 wells completed or abandoned in 1931, as against 604 in 1930 and 727 in 1929. Of these, 107 were dry holes in 1931, 176 in 1930 and 271 in 1929. The number of gas wells completed in the respective years were 61, 79 and 56. The new production was 94,959 bbls. in 1931; 1,130,087 bbls. in 1930; and 64,698 bbls. in 1929.

There were no new oil pools opened in Colorado, but the Greasewood Pool in Weld County, which was discovered in 1930, was extended half a mile to the north and three-fourths of a mile to the southwest. One new gas field was opened up by the Ohio Oil Co. on the Powder Wash structure in the northwestern part of the State. There was very little drilling in the producing field.

In Wyoming, no new pools were discovered, but new pays below the producing horizons were proven in three fields and the productive area of five pools was extended. Two fields, the Cody Pool in Park County and the Rex Lake Field in Carbon County, were abandoned, the limited number of wells going off production. Two important tests which made discoveries in 1930, on the Midway Dome in Natrona County, and the Badger Basin structure in Park County, were completed as producers in 1931. The Garland Dome, in which an oil discovery was made in 1930, was put on production late in 1931.

In Montana, the Cut Bank gas field in Glacier County was extensively developed and two small oil discoveries to the southwest of the Cut Bank area and in Liberty County, northeast of the Kevin-Sunburst Field, were reported. The Dry Creek Field in Carbon County was extended a mile to the northwest and the same distance to the east.

In New Mexico, the area of the Hobbs Pool was outlined as being approximately 5,240 acres and at the end of the year it was given a potential rating of 1,152,857 bbls. daily. The field was under proration during the entire year and some of the wells on the southwestern edge began showing water. The Eunice Pool, 18 miles to the southwest of Hobbs, was drilled to some extent early in the year and results indicated a small field. The gas area in the Jal district was extended three-fourths of a mile to the east. The Artesia district had comparatively little activity, but some territory to the northeast that has not previously been developed was tested in one well which came in as a gasser.

In Utah, the Utah Southern Oil Co. opened up a 15-bbl. producer in Grand County, but continued drilling to lower horizons.

COLORADO

A new gas field was opened up by the Mountain Fuel Supply Co. on the Powder Wash structure in Moffat County, Colorado, just south of the Wyoming line and 20 miles to the east of the Hiawatha gas field. The discovery was made in its No. 1 Burton Musser, C NE, Section 5-11n-97, in a sand in the upper Wasatch formation at a total depth of 2,152 feet. The horizon in which the discovery was made is the highest structurally in the Rocky Mountain area and approximately 2,000 feet above the pay in the Hiawatha Field, measured geologically. The well gauged 35,188,000 feet of gas in 24 hours with a pressure of 685 pounds. The surface elevation of this well is 6,720 feet. It cut water sands at 35 to 40 feet, 640-42 feet and 690-700 feet. Gas sands were encountered at 1,892-95 feet, 2,128-32 feet and 2,152 feet. The 13¾-inch casing was set at 2,145 feet with the expectation that drilling would be very much deeper. The discovery of the new sand in the upper Wasatch of Eocene age points to the possibilities in that horizon in other areas in Colorado and other Rocky Mountain states. The new field, in which only the one well has been drilled, assures additional gas reserves for the natural gas line from the Hiawatha Field in Utah, for which the Mountain Fuel Supply Co. is the producing subsidiary.

The area in northeastern Colorado attracted wide attention in 1931 as a result of the bringing in of the discovery well in the Greasewood Flats district in Weld County in October, 1930, by the Platte Valley Petroleum Co. in its No. 1 Patterson, NE SE NW, Section 24-6n-61. This well, with a surface elevation of 4,664 feet, came in at 6,667 feet, about 5 feet in the Muddy sand, the first sand of the Dakota series. It averaged 350 bbls. per day naturally for close to a year and was the cause of a leasing campaign covering an area 150 miles wide by 200 miles long. The next producer in the field was not completed until late in August, 1931, when the Reiter-Foster Oil Co.'s No. 1 Ida Johnson, C NE NW, Section 24-6n-61, approximately 1,000 feet north of the discovery, was completed 10 feet in the Muddy sand at a total depth of 6,652 feet and made 687 bbls. naturally the first 24 hours. The surface elevation of this well is 4,650 feet. The discovery well showed an immediate decline in production, but did not drop below 130 bbls.

NEW MEXICO

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
HOGBACK:													
Daily average	414	460	432	459	447	503	505	511	501	426	491	426	
Month	12,834	12,880	13,423	13,770	13,857	15,090	15,655	15,841	15,030	13,206	14,730	13,206	169,522
RATTLESNAKE:													
Daily average	1,027	1,033	1,046	994	992	996	874	799	787	776	713	625	
Month	31,837	28,924	32,426	29,820	30,752	29,880	27,094	24,769	23,610	24,056	21,390	19,375	323,933
TABLE MESA:													
Daily average	52	69	70	72	68	81	76	79	77	79	79	73	
Month	1,612	1,932	2,170	2,160	2,108	2,430	2,356	2,449	2,310	2,449	2,370	2,262	26,609
ARTESIA:													
Daily average	656	540	525	522	663	1,010	368	267	456	633	409	415	
Month	20,336	15,120	16,275	15,660	20,553	30,300	11,408	8,277	13,680	19,623	12,270	12,865	196,367
GETTY:													
Daily average	135	95	177	497	303	247	103	.....	.....	.....	.....	.....	
Month	4,185	2,660	5,487	14,910	9,393	7,410	3,193	.....	.....	.....	.....	.....	47,238
HOBBS:													
Daily average	30,463	31,527	31,596	32,639	37,422	37,015	35,788	36,274	36,355	36,962	37,240	37,176	
Month	944,353	882,756	979,445	979,170	1,160,082	1,110,450	1,109,428	1,124,494	1,090,650	1,145,822	1,117,200	1,152,456	12,796,306
JAL:													
Daily average	1,170	1,268	1,081	1,234	1,171	1,161	1,125	1,139	1,095	1,117	1,035	1,010	
Month	36,270	35,504	33,511	37,020	36,301	34,830	34,875	35,309	32,850	34,627	31,050	31,310	413,457
EUNICE:													
Daily average	2,479	2,099	2,483	686	453	452	473	503	448	491	491	419	
Month	76,849	58,772	76,973	20,580	14,043	13,560	14,663	15,593	13,440	15,221	14,730	12,989	347,413
MALJAMAR:													
Daily average	468	285	487	326	526	301	520	629	934	606	924	757	
Month	14,508	10,780	15,097	9,780	16,306	9,030	16,120	19,499	28,020	18,786	27,720	23,467	209,113
LEA CITY:													
Daily average	2,920	2,639	2,522	2,562	2,644	2,503	2,281	1,913	1,890	1,832	1,809	1,810	
Month	90,520	73,892	78,182	76,860	81,964	75,090	70,711	59,303	56,700	56,823	54,270	56,110	830,425
Daily average	39,784	40,115	40,419	39,991	44,689	44,269	42,113	42,114	42,543	42,923	43,191	42,711	42,083
Total 1931	1,233,304	1,123,220	1,252,989	1,199,730	1,385,359	1,328,070	1,305,503	1,305,584	1,276,290	1,330,613	1,295,730	1,324,041	15,360,383
Total 1930	315,549	238,532	337,528	374,880	558,589	686,040	1,368,061	1,311,052	1,344,510	1,343,509	1,212,510	1,286,655	10,377,415
Total 1929	87,668	83,384	89,621	98,640	96,751	88,762	125,116	145,421	177,840	245,675	279,090	285,292	1,803,361
Total 1928	74,865	59,981	69,347	68,160	73,470	58,860	69,471	89,156	94,830	97,309	98,100	120,342	973,891
Total 1927	136,679	138,460	148,738	142,140	112,530	102,120	89,200	76,911	73,500	58,652	71,910	63,384	1,214,284

MONTANA

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
BANNATYNE:													
Daily average	81	64	53	49	54	51	.....	.....	.....	.....	.....	.....	
Month	2,511	1,792	1,643	1,470	1,674	1,530	.....	.....	.....	.....	.....	.....	10,620
CAT CREEK:													
Daily average	1,057	1,062	1,039	1,009	1,033	1,006	1,191	911	904	856	910	932	
Month	32,767	29,736	32,209	30,270	32,023	30,180	36,921	28,241	27,120	26,536	27,300	28,892	362,195
KEVIN-SUNBURST:													
Daily average	4,241	4,532	3,991	4,147	4,310	4,416	4,118	3,834	4,469	4,292	3,251	4,393	
Month	131,471	126,896	123,721	124,410	133,610	132,480	127,658	118,854	134,070	133,052	97,530	136,183	1,519,935
PONDERA:													
Daily average	1,417	1,815	1,690	1,675	1,545	1,494	1,631	1,577	1,483	1,241	824	1,377	
Month	43,927	50,820	52,390	50,250	47,895	44,820	50,561	48,887	44,490	38,471	24,720	42,687	539,918
LAKE BASIN:													
Daily average	60	62	60	60	57	56	.....	71	70	58	60	63	
Month	1,860	1,736	1,860	1,800	1,767	1,680	.....	2,201	2,100	1,798	1,800	1,953	20,555
BORDER:													
Daily average	543	757	681	691	688	707	634	606	627	577	553	493	
Month	16,833	21,196	21,111	20,730	21,328	21,210	19,654	18,786	18,810	17,887	16,590	15,283	229,418
DRY CREEK:													
Daily average	444	633	821	697	511	485	403	355	317	290	244	242	
Month	13,764	17,724	25,451	20,910	15,841	14,550	12,493	11,005	9,510	8,990	7,320	7,502	165,060
Daily average	7,843	8,925	8,335	8,328	8,198	8,215	7,977	7,354	7,870	7,314	5,842	7,500	7,801
Total 1931	243,133	249,900	258,385	249,840	254,138	246,450	247,287	227,974	236,100	226,734	175,260	232,500	2,847,201
Total 1930	253,456	223,408	267,561	298,410	304,172	289,350	304,203	301,165	256,380	234,360	239,650	225,293	3,203,308
Total 1929	261,299	257,656	293,973	298,830	350,238	347,610	347,448	356,190	332,940	335,544	320,490	324,849	3,827,067
Total 1928	363,370	339,679	358,112	350,520	338,272	313,260	317,626	328,600	306,870	296,930	307,440	347,820	3,998,549
Total 1927	426,493	399,863	452,600	417,000	434,155	462,330	456,847	497,364	413,280	428,947	379,560	403,434	5,171,883

daily. The discovery well was subsequently deepened and found the sand to be 31 feet thick.

The third completion took place late in September in the Continental Oil Co.'s No. 1 Briggs, C SE SW, Section 13-6n-61, a distance of 1,320 feet to the north of No. 1 Ida Johnson. It topped the sand at 6,639 feet and was drilled to 6,664 feet, making 930 bbls. of oil and 3,750,000 feet of gas the first 24 hours. It proved to be the best well of the three. The No. 1 Ida Johnson went off of production with the bringing in of No. 1 Briggs, but subsequently was restored. The surface elevation is 4,647 feet.

The three producers proved the territory for a mile in a north-south line, as far as the Muddy sand was concerned, but none went to the Dakota, the underlying sand. The Reiter-Foster Oil Co.'s No. 1 Johnson-Juhl, C SE SE, Section 14-6n-61, half a mile to the west of No. 1 Briggs, was drilled into the Muddy sand at 6,688-98 feet and found it dry. The surface elevation is 4,671 feet. Not only had the sand thinned, but was deeper, indicating the edge of the structure. It was then drilled on down and cut the Dakota at 6,756-6,914 feet. The sand was 158 feet with a shale break at 6,775-85 feet. The upper 19 feet was dry and water came in below the break. At a total depth of 6,916 feet, there was 4,000 feet of water in the hole. The temperature of the hole was 242° F. at 6,850 feet.

Only one well reached the Muddy sand to the south or southwest of the three producers, this being the Greeley Oil Co.'s No. 1 Gadbois, C NW NW, Section 25-6n-61, three-fourths of a mile to the southwest of the discovery. It drilled through the Muddy sand at 6,698 feet, the sand being mostly shale and the oil rising only 500 feet in the hole. Rotary bit was used in going into the sand. Subsequently it was found that oil was rising in the hole and several weeks after completion it made a couple of heads while swabbing. Work is to be resumed on the well and it may make a small producer.

WYOMING

Two fields in Wyoming were abandoned in 1931, these being the Cody, or Shoshone Field in Park County, where the Ohio Oil Co. drilled two deep wells that were small producers and finally went off altogether, and the Simpson Ridge Field in Carbon County, where the Producers & Refiners Corp. operated five small wells from a sand at 900 feet that finally went to water.

There were no new pools discovered in Wyoming during 1931, but the proven area of the LaBarge, Pilot Butte, Frannie, Garland and Osage Fields was extended and deeper pays were found in the Big Sand Draw, Big Muddy and Lance Creek Fields. The extension of the LaBarge Pool in Sublet County was made in the Calmonica Petroleum Corp.'s No. 2 Elkhorn Oil, NE, Section 17-27-113, 3 miles to the north of the nearest producer. This was drilled by C. P. Fitzpatrick and others, and from a sand at 2,040-2,196 feet, the well produced 125 bbls. the first 24 hours on the pump, the oil testing 46.4 degrees gravity, or higher than the grade found to the south in the field proper.

MONTANA

The principal drilling activity in Montana during the year was the development of the Cut Bank gas field in Glacier County by L. B. O'Neil as trustee for the Montana Power Co., which constructed a natural gas line from that field to Helena, Butte and other cities and towns in Montana. The power company previously had purchased the gas line franchises and properties held by O'Neil and his associates. Attention was directed to this field in 1930 when Hill and O'Neil's No. 1 Michaels, C SE SE, Section 28-36-5w, was completed in a sand at 2,750-71 feet as a 15,000,000-foot gasser. Later in the year the Texas Production Co.'s No. 1 Small, NE SW SW, Section 13-35-6w, 6 miles to the southwest, was completed at 2,995 feet as a 4,390,000-foot gas well after finding water in the Ellis-Madison contact at 3,009 feet and plugging back. Early in 1931, O'Neil's drilling campaign was inaugurated and during the year 17 wells out of 18 drilled were completed as gassers with an aggregate initial output of 226,910,000 feet, open flow gauge. The most northerly of these wells is No. 1 Cummings, C SW, Section 22-36-5w, and the most southerly was No. 1 McNeil, C NE, Section 23-35-5w, a distance of 5½ miles, with a proven width for the structure of 3½ miles. The wells were widely spaced and prove up a large reserve for the pipe line system which was built and put into operation during the year.

An equally important development was the further exploration of the Dry Creek Field in Carbon County, just north of the Wyoming line and the Elk Basin Field. This field was proved for gas in the Frontier by the Ohio Oil Co. two years ago. In 1930, it discovered oil in the Dakota-Lakota sands at a total depth of 5,452 feet in its No. 2 Northern Pacific, NE NW SE, Section 11-7s-21. In a 16-hour test the well flowed at the rate of 2,300 bbls. per day, the oil being unusually high grade and testing 52 degrees gravity. Early in 1931 the well was deepened 6 feet and the flow was increased from 600 bbls. to 1,200 bbls. daily. It subsequently declined to 800 bbls. During 1931 the Ohio company drilled in its No. 1 Souders, C SW SE, Section 2-7s-21, which was completed as a gas well in the second Frontier at a total depth of 4,409 feet for 15,000,000 feet per day. An east-west fault cuts the dome and the discovery well is south of this fault and No. 1 Souders to the north. Its No. 1 Montana Industrial, SE SW NE, Section 11-7s-21, a north offset to the oil discovery and close to the north side of the fault, was completed in the Dakota at 5,439 feet for only 10 bbls. of oil and 800,000 feet of gas. Its No. 1 Chapman, C SW SW, Section 2-7s-21, farther to the north and west,

WYOMING

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
BIG MUDDY:													
Daily average	1,855	1,876	1,907	1,965	1,842	1,844	1,738	1,741	1,719	1,671	1,637	1,722	
Month	57,505	52,528	59,117	58,950	57,102	55,320	53,878	53,971	51,570	51,801	49,110	53,382	654,234
DALLAS-DERBY:													
Daily average	644	754	621	651	656	647	307	369	919	649	633	642	
Month	19,964	21,112	19,251	19,530	20,336	19,410	9,517	11,439	27,570	20,119	18,990	19,902	227,140
DUTTON CREEK:													
Daily average	.....	123	109	108	92	111	69	.....	22	82	72	71	
Month	.....	3,444	3,379	3,240	2,852	3,330	2,139	.....	660	2,542	2,160	2,201	25,947
ELK BASIN:													
Daily average	701	658	685	671	694	707	662	631	671	668	641	647	
Month	21,731	18,424	21,235	20,130	21,514	21,210	20,522	19,561	20,130	20,708	19,230	20,057	244,452
FERRIS:													
Daily average	16	38	34	28	30	31	.....	21	34	37	19	36	
Month	496	1,064	1,054	840	930	930	.....	651	1,020	1,147	570	1,116	9,818
FRANNIE:													
Daily average	835	884	904	890	913	917	509	176	258	269	1,320	1,514	
Month	25,885	24,752	28,024	26,700	28,303	27,510	15,779	5,456	7,740	8,339	39,600	46,934	285,022
GRASS CREEK:													
Daily average	1,918	1,896	1,926	1,963	2,060	2,088	1,978	2,003	1,969	1,944	1,928	2,111	
Month	59,458	53,060	59,830	58,890	63,860	62,640	61,318	62,093	59,070	60,264	57,840	65,441	723,764
HAMILTON:													
Daily average	.....	.....	1	.....	.....	.....	.....	.....	.....	930	811	893	
Month	.....	.....	1	.....	.....	.....	.....	.....	.....	28,830	24,330	27,683	80,843
HUDSON:													
Daily average	291	425	228	529	310	308	380	283	336	254	216	406	
Month	9,021	11,900	7,068	15,870	9,610	9,240	11,780	8,773	10,080	7,874	6,480	12,586	120 282
LA BARGE:													
Daily average	1,705	1,731	1,678	1,279	1,266	1,210	1,199	1,114	1,183	1,138	1,181	1,061	
Month	52,855	48,468	51,863	38,370	39,246	36,300	37,169	34,534	35,490	35,278	35,430	32,891	477,894
LANCE CREEK:													
Daily average	142	178	178	183	252	247	299	593	334	254	233	205	
Month	4,402	4,984	5,518	5,490	7,812	7,410	9,269	18,383	10,020	7,874	6,990	6,355	94,507
LOST SOLDIER:													
Daily average	3,977	4,722	2,799	4,579	3,815	3,325	3,076	2,983	2,597	2,826	4,161	3,716	
Month	123,287	132,216	86,769	137,370	118,265	99,750	92,256	92,473	77,910	87,606	124,830	115,196	1,287,928
OREGON BASIN:													
Daily average	1,541	1,319	1,378	1,440	1,446	1,461	1,270	1,712	762	224	659	157	
Month	47,771	36,932	42,718	43,200	44,826	43,830	39,370	53,072	22,860	6,944	19,770	4,867	406,160
OSAGE:													
Daily average	1,442	1,363	1,236	1,233	1,273	1,305	852	1,028	628	411	419	453	
Month	44,702	38,164	38,308	36,990	39,463	39,150	26,629	31,868	18,840	12,741	12,570	14,043	353,228
POISON SPIDER:													
Daily average	293	495	249	742	216	210	1,055	237	84	74	64	70	
Month	9,083	13,860	7,719	22,260	6,696	6,300	32,705	7,347	2,520	2,294	1,920	2,170	114,874
ROCK CREEK:													
Daily average	2,016	1,989	1,807	1,928	1,951	1,886	1,894	1,845	1,796	1,767	1,752	1,753	
Month	62,496	54,292	58,807	57,840	60,481	56,550	58,714	57,195	53,880	54,777	52,560	54,343	681,935
SALT CREEK:													
Daily average	26,406	26,325	24,937	26,065	25,810	25,725	24,245	23,057	23,246	22,298	21,509	21,415	
Month	818,586	737,100	773,047	781,950	800,110	771,750	751,595	714,767	697,380	691,238	645,270	663,865	8,846,658
BYRON:													
Daily average	9	11	5	10	9	10	5	.....	.....	.....	.....	.....	
Month	279	308	155	300	279	300	155	.....	.....	.....	.....	.....	1,776
WARM SPRINGS:													
Daily average	.....	.....	.....	.....	.....	.....	86	27	.....	.....	.....	.....	
Month	.....	.....	.....	.....	.....	.....	2,666	837	.....	.....	.....	.....	3,503
PILOT BUTTE:													
Daily average	.....	.....	.....	.....	.....	.....	.....	.....	449	.....	.....	37	
Month	.....	.....	.....	.....	.....	.....	.....	.....	13,470	.....	.....	1,147	14,617
TEAPOT:													
Daily average	23	25	24	25	22	23	11	44	.....	12	10	10	
Month	713	700	744	750	682	690	341	1,364	.....	372	300	310	6,966
SOUTH CASPER CREEK:													
Daily average	.....	.....	.....	.....	235	570	.....	.....	.....	.....	.....	.....	
Month	.....	.....	.....	.....	7,285	17,100	.....	.....	.....	.....	.....	.....	24,385
MIDWAY:													
Daily average	.....	45	.....	.....	.....	.....	.....	.....	.....	.....	.....	20	
Month	.....	1,260	.....	.....	.....	.....	.....	.....	.....	.....	.....	620	1,880
TORCHLIGHT:													
Daily average	.....	.....	.....	24	.....	.....	.....	.....	24	.....	.....	.....	
Month	.....	.....	.....	720	.....	.....	.....	.....	720	.....	.....	.....	1,440
BADGER BASIN:													
Daily average	.....	.....	.....	.....	.....	.....	.....	.....	.....	49	50	.....	
Month	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,519	1,500	.....	3,019
Daily average	43,814	44,806	40,786	44,313	42,892	42,624	39,542	37,864	37,031	35,557	37,315	36,939	40,253
Total 1931	1,358,234	1,254,568	1,264,366	1,329,390	1,329,652	1,278,720	1,225,802	1,173,784	1,110,930	1,102,267	1,119,450	1,145,109	14,692,272
Total 1930	1,430,898	1,409,184	1,587,665	1,527,930	1,565,283	1,406,850	1,464,378	1,449,426	1,512,690	1,516,489	1,384,530	1,484,684	17,740,017
Total 1929	1,512,087	1,442,336	1,599,104	1,490,430	1,581,806	1,520,160	1,674,434	1,764,396	1,652,760	1,643,775	1,586,700	1,603,630	19,071,618
Total 1928	1,756,505	1,598,602	1,714,889	1,748,520	1,908,918	1,834,410	1,852,684	1,909,476	1,791,900	1,915,397	1,762,980	1,609,179	21,403,460
Total 1927	1,870,727	1,678,180	1,840,439	1,838,070	1,896,301	1,852,920	1,898,626	1,688,725	1,577,700	1,550,620	1,563,210	1,728,157	20,983,675

Where Knock Rating Is a Problem

Pennsylvania refiners, handicapped by the low octane number of their gasoline, are installing modern equipment to improve this quality.

In recent months four of them have selected Vapor Phase Refining to preserve the knock rating which their cracking and reforming units give them. In this way they know they will get a non-gumming, colorless, completely re-

Vapor Phase Refining Helps Answer It

fined motor fuel with an octane number at least as high as that of the raw cracked product—and at a low cost.

These plants are already in operation. They show the refiners' faith in Vapor Phase Refining is more than justified.

Whatever your crude, whatever your cracking units, our process can help you.

THE GRAY PROCESSES CORPORATION
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NEWARK, NEW JERSEY

tested all horizons down to the red beds at a total depth of 6,219 feet and found nothing of value in the Sundance, the lowest sand tested. It then plugged back to 5,600 feet to test a show in the Dakota, and at last reports this well appears to be a producer, flowing by heads, but its capacity has not been determined at this writing. The Carbon Oil & Gas Co.'s No. 1 Armstrong, SW cor. NW, Section 7-7s-22, a little more than a mile to the east, was drilled into the Dakota late in December and at a total depth of 5,710 feet, it cleaned itself from the Dakota, topped at 5,601 feet, and built up a pressure of 1,030 pounds in 30 minutes. It made several flows before being shut in for tankage and it looks like one of the best wells so far completed, though it has not been tested and estimates vary considerably. It is south of the fault, on the same side as the discovery, and means an extension of more than a mile of the productive area. It is still 70 feet above the Lakota from which the big production came in the discovery well. The Ohio company is shipping oil from the discovery well to the Utah Oil Refining Co. at Salt Lake City.

NEW MEXICO

There were no major discoveries reported during 1931 in New Mexico and no important extensions of the producing fields, except that in Hobbs the productive area of the pool was established.

The Hobbs Pool was under proration during the entire year under an agreement between the 23 operators and the State of New Mexico. The agreement which expired by limitation on July 10, was renewed for another six months' period with a proviso that the State could withdraw from the agreement upon 30 days' notice. This option was not exercised. The allowable outlet of the pool was determined by an executive committee in charge of proration and depended upon nominations by the pipe line companies as to their requirements. The allowable outlet at the beginning of the year was 31,475 bbls. daily, and at the end of the year, 37,183 bbls. These figures represent the approximate minimum and maximum semimonthly figures for the year. The potential capacity of the field, as reported by C. G. Staley, umpire, was 1,081,578 bbls. daily on January 1, 1931, from 134 wells on 120 units of 40 acres each. It was 1,152,857 bbls. daily from 149 wells on 131 units as of January 1, 1932. At the beginning of 1932, the question of renewing the proration agreement again was up for consideration between the operators and the State. Also, plans were under consideration for the operation of the pool as a unit with one operator in charge.

Drilling operations in the pool came to a standstill in April when the limits had been defined on practically all sides. Early in 1931, the Midwest Refining Co. completed its No. 29 Turner, C SW SW, Section 34-18-38, on the southeastern side in the Hobbs townsite, at a total depth of 4,175 feet, with a potential production of 21,352 bbls. of oil daily and 16,500,000 feet of gas. This well was shut in until September, when it was put on production, and this brought about a renewal of activity in that area by the Gypsy Oil Co., the Continental Oil Co. and the Midwest Refining Co. None of the wells, although they were located between No. 29 Turner and producers higher on structure, came up to that well in capacity. However, several of them developed a very large gas pressure in the lime at from 100 to 300 feet above the usual depth of the pay. This gas was killed and the new wells were completed at the usual depths.

During 1931, the wells on the extreme southwestern and western edges began to show water, but the intrusion has been localized as far as possible. Some of the wells recently completed on the southeastern edge, which are approximately on the same structural contour, had begun to show some water at the end of the year. The structure in the area of water intrusion on the southwest is approximately 140 feet high and the water level has risen better than half of the way, but nearer the top the structure is more than 200 feet high. Efforts were made late in December to put into effect a one-day shutdown of wells to further reduce production, but due to the necessity for keeping the wells showing water in continuous operation and difficulty in restoring the flow in other wells after being idle, had hindered the reaching of an agreement. The 131 units of 40 acres each, a total of 5,240 acres, being produced at the end of the year about represents the productive area of the pool and no further extensions are in sight, although it is confidently expected that other pools in Lea County will be found when conditions warrant further exploration.

In Harding County, the Kumbaca Oil & Gas Co. opened up a flow of 3,654,000 feet of carbon dioxide gas in its No. 1 Kerline, NW cor. SE, Section 34-21-30, at 940-73 feet.

CANADA'S OIL OUTPUT IN 1931 KEPT DOWN BY CONSERVATION

By Victor Lauriston

Official estimates place the crude oil production from all Canadian fields for the year 1931 at 1,554,600 bbls. valued at $4,566,000. These figures are, of course, subject to revision. They indicate, however, a slight increase in quantity and a considerable decrease in value in comparison with 1930, when the output aggregated 1,522,220 bbls. valued at $5,033,820.

The 1931 production, in quantity, establishes a new record for Canada.

Estimates for the various provinces for the year 1931 show the following figures:

Province—	Barrels 1931	1930
Alberta	1,425,000	1,433,844
Ontario	123,000	81,326
New Brunswick	6,600	7,000

Official figures indicate a slight decrease in natural gas production for all Canada. The production for all Canadian fields for the year 1931 aggregated 26,874,600,000 feet valued at $9,645,000 compared with 29,376,919,000 feet valued at $10,289,985 in 1930. In point of quantity, this represents a decrease of 8.5 per cent. The decrease was due to the mild winter and fall of 1931, which materially affected the natural gas consumption.

Comparative figures for 1931 and 1930 are as follows:

Province—	Cubic feet 1931	1930
New Brunswick	643,000,000	665,000,000
Ontario	7,625,000,000	8,400,000,000
Alberta	18,606,600,000	20,500,000,000

Eastern Canada Drilling

The most important wildcatting of the year in eastern Canada was in Nova Scotia, where Imperial Oil, Ltd., drilled two deep tests. No. 1, at Scotsburn, finished dry at 1,950 feet, while No. 2, near Amherst, was carried to 4,134 feet without getting any production.

In New Brunswick, drilling operations by New Brunswick Gas & Oilfields, Ltd., were largely devoted to maintaining natural gas reserves in the Stoney Creek Field. A test for a possible extension of the field toward Moncton had not, at last reports, secured conclusive results.

Quebec attracted considerable attention, but though extensive leasing was done in the St. Lawrence Valley between Quebec and Montreal, actual drilling was confined to a single test by the Hope Engineering Co. in Richelieu County. At last reports this test was still unfinished, though a small gas production was reported.

In Ontario Field

There was considerable drilling for gas in Ontario, including some important wildcatting, and fairly good results were secured. In the Haldimand-Norfolk area, a feature early in the year was an exploration campaign by Union Gas Co. on acreage in the vicinity of Cayuga. A series of 15 wells were drilled in Rainham and Walpole Townships, Haldimand County, and in Woodhouse Township, Norfolk County. Drilling depths were between 800 and 1,025 feet; some 11 wells got production ranging from 21,000 to 160,000 feet a day, while four proved dry holes.

There has been considerable similar drilling by various companies in Wentworth, Haldimand and Norfolk, small gassers being the rule.

In the vicinity of Tillsonburg, acreage near the western end of Norfolk County was tested by Acme Oil & Gas Co. and Tillsonburg Oil & Gas Co. Approximately 10 wells have been completed in this area, the producing sand, around 1,280 feet, yielding as high as 540,000 feet a day. A wildcat test in a new area north of Tillsonburg is planned by a Toronto company.

Two potential gas areas in Middlesex County were tested in 1931. In Mosa Township, near Newbury, Southern Ontario Gas Co. had previously encountered

(Continued on Page 117)

NEW MEXICO

Summary of Wells Completed in 1931

County—	Comp.	Prod.	Dry	Gas
Chaves	1	0	1	0
Curry	1	0	1	0
Eddy	10	623	5	2
Harding	1	0	0	1
Lea	26	79,752	6	2
San Juan	13	250	3	5
Torrance	1	0	0	1
Valencia	5	0	5	0
Total 1931	58	80,625	21	11
Total 1930	209	1,099,268	36	11
Difference	151	1,018,643	15	0

Completions by Months

	Comp.	Prod.	Dry	Gas
January	10	21,788	4	4
February	13	41,748	2	0
March	3	4,108	1	0
April	3	5,052	0	0
May	2	0	2	0
June	3	1,523	0	2
July	1	0	0	1
August	5	0	2	3
September	5	50	4	0
October	3	75	2	0
November	6	2,757	3	0
December	4	3,524	1	1
Total	58	80,625	21	11

COLORADO

Summary of Wells Completed in 1931

County—	Comp.	Prod.	Dry	Gas
Archuleta	1	0	1	0
Baca	1	0	1	0
Boulder	1	0	1	0
Fremont	2	125	0	0
La Plata	1	50	0	0
Larimer	4	100	1	2
Mesa	1	0	1	0
Moffat	4	296	0	2
Montezuma	5	0	4	1
Montrose	1	0	1	0
Pueblo	1	0	1	0
Rio Blanco	1	0	1	0
Routt	1	100	0	0
Weld	3	2,095	0	0
Total 1931	27	2,766	12	5
Total 1930	57	969	34	10
Difference	30	1,797	22	5

Completions by Months

	Comp.	Prod.	Dry	Gas
January	2	140	0	0
February	6	846	3	0
March	2	0	2	0
April	4	200	0	2
May	0	0	0	0
June	5	0	4	1
July	2	0	0	2
August	0	0	0	0
September	1	600	0	0
October	2	980	0	0
November	3	0	3	0
December	0	0	0	0
Total	27	2,766	12	5

UTAH

Summary of Wells Completed in 1931

County—	Comp.	Prod.	Dry	Gas
Washington	2	0	2	0
Total 1931	2	0	2	0
Total 1930	4	0	3	1
Difference	2	0	1	1

Completions by Months

	Comp.	Prod.	Dry	Gas
January	1	0	1	0
February	0	0	0	0
March	0	0	0	0
April	0	0	0	0
May	1	0	1	0
June	0	0	0	0
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
October	0	0	0	0
November	0	0	0	0
December	0	0	0	0
Total	2	0	2	0

(Continued on Page 120)

COLORADO

Daily Average and Monthly Production of Crude Oil in 1931

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
MOFFATT:													
Daily average	913	1,073	983	956	933	907	821	803	669	764	741	767	
Month	28,303	30,044	30,473	28,680	28,934	27,210	25,451	24,893	20,070	23,684	22,230	23,777	313,738
FORT COLLINS:													
Daily average	1,141	1,065	973	984	991	1,004	975	426	1,062	911	963	917	
Month	35,371	29,820	30,132	29,520	30,721	30,120	30,225	13,206	31,860	28,241	27,060	28,427	344,703
FLORENCE:													
Daily average	504	461	244	441	365	326	314	326	375	429	308	333	
Month	15,624	12,908	7,564	13,230	11,316	9,780	9,734	10,106	11,250	13,299	9,240	10,323	134,373
ILES:													
Daily average	950	981	1,088	1,015	1,161	1,440	1,246	1,193	967	983	922	907	
Month	29,450	27,468	33,728	30,450	36,022	43,200	38,626	36,983	29,010	30,473	27,660	28,117	391,187
TOW CREEK:													
Daily average	355	365	372	365	366	347	296	337	296	329	310	307	
Month	11,005	10,220	11,532	10,950	11,346	10,410	9,176	10,447	8,880	10,199	9,300	9,517	122,982
WALDREN:													
Daily average	.....	.....	.....	.....	.....	56	134	55	14	.....	.....	.....	
Month	.....	.....	.....	.....	.....	1,680	4,154	1,705	420	.....	.....	.....	7,959
ORCHARD:													
Daily average	378	317	286	336	353	353	320	298	861	1,037	682	622	
Month	11,718	8,876	8,866	10,080	10,943	10,560	9,920	9,238	25,830	32,147	20,460	19,282	177,920
Daily average	4,241	4,262	3,945	4,097	4,170	4,432	4,106	3,438	4,244	4,453	3,865	3,853	4,090
Total 1931	131,471	119,336	122,295	122,910	129,270	132,960	127,286	106,578	127,320	138,043	115,950	119,443	1,492,862
Total 1930	151,187	146,860	144,274	133,590	137,175	136,950	139,252	131,688	126,430	131,192	122,010	124,031	1,623,639
Total 1929	215,016	182,280	213,135	197,130	223,727	224,220	213,838	212,009	183,480	167,958	163,830	164,984	2,361,598
Total 1928	234,635	232,625	259,563	263,610	264,382	248,940	253,805	234,668	208,830	262,136	220,350	211,699	2,744,184
Total 1927	215,016	223,356	242,947	274,620	239,165	217,200	232,926	226,021	204,150	220,596	220,050	205,623	2,722,670

THE LAW MAKERS ARE BREAKING FAITH

Gasoline is used by practically everybody, and a tax upon the sale of this commodity is levied by every state in the Union. The imposition of the gasoline tax was accepted without opposition by motorists solely because the proceeds *were* used for the construction and maintenance of highways.

The tax had a modest beginning in 1918 when the State of Oregon levied a one cent per gallon tax. Today, the average of all state taxes is 4.07 cents per gallon. In some instances counties, cities and other local communities have also superimposed another tax upon the one levied by the state.

The tax has been pyramided until it has now reached the point of diminishing returns, and the consumption of gasoline is in some states materially less than it would be with a lower tax. This not only prevents the state from obtaining the revenue for roads, but also places a burden upon the oil industry which has proven so destructive as to warrant a nation-wide uprising against further increases in the tax.

Many states are diverting the proceeds from the gasoline tax to pay the costs of various functions of government alien to highways. Some of these purposes have been the propagation of oysters, state charity, free seeds, and even the state treasury deficit.

Every legislature which is meeting at the present time or which will meet in the future is planning further tax raids upon the motorists by providing diversion of part of the proceeds of the tax from its original purpose, or by levying additional gasoline taxes for purposes other than highway construction or maintenance.

Thus, the law makers are breaking faith with the motorists and the public generally. The time to rectify such practices has arrived.

The Governmental Cost Structure must be deflated to bring it into line with the degree of economy which has been found necessary in business and living costs.

This Association urges every motorist and oil operator to become vocal in opposition to federal gasoline taxes and to increases or diversions of the state gasoline taxes.

THE GENERAL MID-CONTINENT OIL & GAS ASSOCIATION

TULSA, OKLAHOMA

(This space contributed by a Member)

Many Long Oil Pipe Lines Laid in 1931

Outlets for East Texas Field in Every Direction and Big Trunk Lines From Oklahoma East Constructed Last Year

An extensive program of major pipe line building was one of the features of the oil business in 1931. Practically all of this work was done to supply the East Texas fields with outlets and to connect the Mid-Continent fields with eastern refineries and with Gulf Coastal refineries and tankers. Many millions were invested in these oil carriers. Smaller pipe line building programs were carried out in Kansas and the Rocky Mountain fields.

Many Lines Out of East Texas

East Texas saw the greatest pipe line program ever completed in one year in the history of the development of any field in the United States, during 1931. The majority of these lines were laid during the first eight months of the year, consuming two, three or four months to lay the longer and larger lines from Gregg County to water terminals on the Gulf Coast.

Total mileage of the major outlets of the district is in the neighborhood of 1,520 miles, and total daily capacity nearly 750,000 bbls.

Some of the outlets of the district connect with trunk lines which run from Oklahoma, Louisiana and Arkansas, and within a short distance of the producing area, but four of the lines were laid directly from the field to the Gulf. These lines were laid by the Shell Pipe Line Co., Atlantic Pipe Line Co., the Texas-Empire Pipe Line Co. and Sun-Yount Lee Pipe Line Co.

Before Governor Sterling declared a general shut-in of all wells in the district on August 17 there was not enough trunk line capacity to take care of the daily production, which was running far over 800,000 bbls. per day, and for two days over 1,000,000 bbls. per day, but since the field was curtailed to 400,000 bbls. per day there has been plenty of pipe line outlet, many of the companies having more connections in the latter part of the year than they really desired, the demand for the oil having decreased in November and December.

There were approximately 157 miles of gathering lines laid from the various parts of the field to loading racks, refineries and storage tanks in the district. These lines are owned by smaller companies and producers. There were 198 miles of connecting lines laid by the major purchasers and pipe line companies in the district, these lines being laid to loading racks, or connecting with main trunk lines running from the district.

Eighteen Local Refineries

There were 18 refineries constructed in the district, the smallest having a daily capacity of 300 bbls. and the largest a capacity of 15,000 bbls. per day. The Sinclair Refining Co. was the largest company to build a plant in the district, constructing a 5,000-bbl. plant at Gladewater. Total daily capacity of the plants is 79,300 bbls. They are only processing around 16,000 bbls. per day, showing that the refinery situation has been overconstructed in the district. Five are completely shut down at present, while none of them has been running to capacity, as the figures will plainly show.

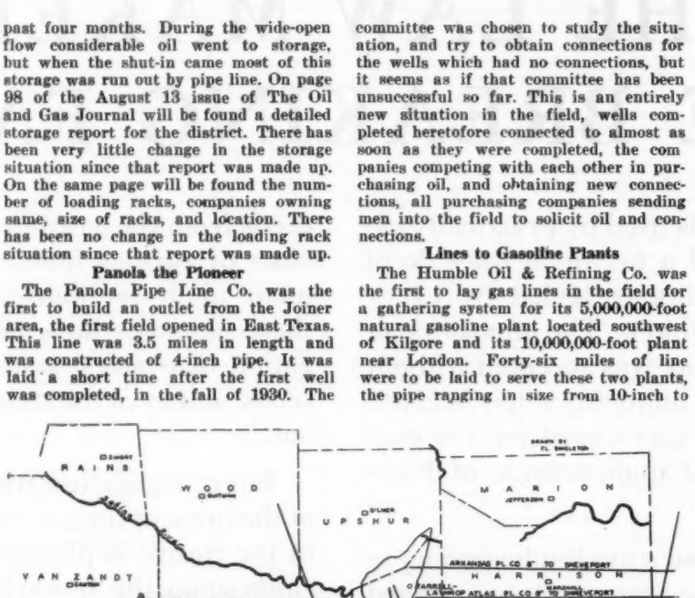
Since the field has been curtailed the major pipe lines serving the district have been running practically every day's entire production. The 53 loading racks previously erected in the district and being in daily use up to August 17, were all shut down at the close of the year with the exception of two or three each week, which ship out only 2,200 bbls. per day. Truly the district was overbuilt with outlet facilities of all kinds, including storage, there being approximately 7,500,000 bbls. of steel storage erected in the district, and around 2,000,000 bbls. of oil in storage during the past four months. During the wide-open flow considerable oil went to storage, but when the shut-in came most of this storage was run out by pipe line. On page 98 of the August 13 issue of The Oil and Gas Journal will be found a detailed storage report for the district. There has been very little change in the storage situation since that report was made up. On the same page will be found the number of loading racks, companies owning same, size of racks, and location. There has been no change in the loading rack situation since that report was made up.

Panola the Pioneer

The Panola Pipe Line Co. was the first to build an outlet from the Joiner area, the first field opened in East Texas. This line was 3.5 miles in length and was constructed of 4-inch pipe. It was laid a short time after the first well was completed, in the fall of 1930. The committee was chosen to study the situation, and try to obtain connections for the wells which had no connections, but it seems as if that committee has been unsuccessful so far. This is an entirely new situation in the field, wells completed heretofore connected to almost as soon as they were completed, the companies competing with each other in purchasing oil, and obtaining new connections, all purchasing companies sending men into the field to solicit oil and connections.

Lines to Gasoline Plants

The Humble Oil & Refining Co. was the first to lay gas lines in the field for a gathering system for its 5,000,000-foot natural gasoline plant located southwest of Kilgore and its 10,000,000-foot plant near London. Forty-six miles of line were to be laid to serve these two plants, the pipe ranging in size from 10-inch to



Map showing major pipe line outlets of the East Texas district, and approximate area of the field. All of these major outlets were constructed in 1931, the largest pipe line program ever completed in a field within a year.

Rusk County Pipe Line Co. and Inland Waterways Pipe Line Co. were the next two companies to lay short lines out of this area to loading racks on the I.&G.N. Railroad north of the field, at Friars Switch.

Crude from the district is not only being run to Gulf terminals, but it is going to refineries and terminals in Louisiana, is transported into trunk lines which can pump either north or south, and much of it is going into Oklahoma, thence east through other large trunk line hookups, as far east as Pittsburgh. Stanolind Oil & Gas Co., Prairie Oil & Gas Co., Sinclair Oil & Gas Co. and the Gulf Production Co. are the largest transporters of crude to the north by their various pipe line hookups and systems.

Wells Without Connections

The only lines being laid in the field at present are the necessary gathering lines as outpost wells are completed, and these and other wells are connected to as completed. At this writing there are about 50 unconnected wells, and it looks as if more wells would be without connections, as about 10 per day are being completed, and the purchasing companies already have sufficient connections. A 20-inch. The Gulf Production Co. is now surveying for a gas gathering system to serve the plant under construction at London in Rusk County.

Plenty of Crude Outlet

It is not expected that any more refineries will be constructed in the district, and no trunk lines out of it. Many of the loading racks now standing idle may be dismantled during 1932, and gathering lines connecting to them taken up, or converted into gathering lines for trunk lines, as many have already been thus put into service. Gas lines to other proposed casinghead gasoline plants will probably constitute the main construction work in the field during the ensuing year.

The Shell Pipe Line Corp., Atlantic Pipe Line Co., Sun-Yount Lee Pipe Line Co. and Texas-Empire Pipe Line Co. put their lines into operation during the latter half of 1931. The Texas-Empire and Atlantic lines went into service the latter part of September. The Sun-Yount Lee line went into service the middle of July. The Humble Pipe Line Co. laid its second 10-inch line out of its Longview station in Gregg County to Moore station in Louisiana, starting construction on this the latter part of November, doubling the outlet of its Gregg County carriers.

In West Texas

Seventeen miles of combination 2, 3 and 4-inch pipe line was laid from the Pecos Valley Pool, northern Pecos County, to connect with the Wickett Pipe Line Co.'s 4-inch line at Grand Falls, across the border in Ward County, to provide an outlet for the Pecos Valley Pool oil. C. S. Messenger and other producers in the pool constructed this line. The line has a capacity of 1,000 bbls. per day.

The The Texas Pipe Line Co. constructed 27 miles of 6-inch pipe line from the Big Lake Field, Reagan County, to connect with its main line in the Yates Pool, Pecos County, to deliver oil from the Big Lake Field to the Republic Refining Co.'s refinery at Houston. This line was laid in order to cut down tank car shipments and curtail that expense on the shipments of crude from that field.

From Oklahoma Fields

Continental Oil Co.'s new 8-inch line was the first line completed in Oklahoma in 1931. It was in operation February 1, and connected the main system near Tonkawa, in Kay County, to the Oklahoma City Field in Oklahoma County. The company owns production in the south end of the Oklahoma City Field and the crude oil was transported to the company's refinery at Ponca City. At the time the line was built only one pipe line station was completed, it being at the Oklahoma City end of the line. The line has a capacity of 12,000 bbls. a day, which can be increased with additional pipe line stations when necessary.

In January the Union Gulf Pipe Line Co. completed its line extending from connections with the Gulf Pipe Line Co. near Tulsa to Spencerville, Ohio, where connection was made with the Buckeye Pipe Line Co.'s line to transport oil to the Toledo and Pittsburgh plants of the Gulf Refining Co., and the pipe line tested and put into operation. It was a 10-inch line with a rated capacity of 35,000 bbls. a day.

The line is approximately 900 miles long, starting near the Glenn Pool in Oklahoma and crossing the Mississippi River a few miles south of St. Louis, Mo. A branch line was also completed from Dublin, Ind., to the Gulf refinery at Cincinnati, Ohio.

The Continental Oil Co. completed a 2-inch pipe line to the Reiter-Foster Pool, in Payne County. The line was completed in March and connects with the company's main 8-inch line from Oklahoma City to Tonkawa.

The Stanolind Pipe Line Co. announced in September that it had let contracts for the construction of 280 miles of 10 and 12-inch loops for its systems from Oklahoma to Chicago. Additional equipment is also being installed at the stations along the line. Some of these units are being moved from the company's line from Wyoming, which was recently leased for the transportation of natural gas.

The new loops on the main line will increase the capacity of the line and while the company may not need the additional capacity at the present time, it felt it would be a constructive and helpful measure if it constructed the loops at this time.

The contract for the construction of the Illinois loops was awarded to the Sheehan Pipe Line Co. These consisted of 48 miles of 12-inch and 29 miles of 10-inch. Ford, Bacon & Davis was given the contract for the new work in Missouri and Oklahoma. These loops included 26 miles of 10-inch and 13 miles of 12-inch in Oklahoma, and 49 miles of 12-

inch and 36 miles of 12-inch and 4 and 8 miles of loops of 10-inch in Missouri. Conner & Son were given the contract in Kansas for the construction of 22 miles of 10-inch and 42 miles of 12-inch.

The Gulf Pipe Line Co. started to loop its pipe line in December between the company's station at Grayson, 4 miles east of Henryetta, in Okfuskee County, Oklahoma, and Perryman, near Jenks, in the same state. The main line of the Gulf Pipe Line Co. passes through Grayson, with feeder lines from the Greater Seminole Field. The oil from Seminole has been sent to Port Arthur, Tex., but to give a greater outlet to this oil to the eastern refineries of the Gulf company the 8-inch loop was authorized.

The line will be approximately 40 miles long and will extend in a straight line between the two stations and will increase the capacity approximately 20,000 bbls. a day. The pump station at Grayson will not be increased in size as it is now large enough to handle the additional oil to be secured from Seminole area.

The actual construction work on the line started January 2, 1932. The company does not intend to rush the work and it will be done mostly by their own men, by hand. The labor saving machines will not be used in the construction of the line as the company plans to give additional employment to a number of men during the winter months.

Kansas Pipe Lines

A little over a year ago the Prairie Pipe Line Co. built a pipe line into the Schurr Pool, in Rice County, Kansas. It was in use only a month when the company withdrew as a purchaser of crude oil on January 1, 1931. During the last three months of the Stanolind Crude Oil Purchasing Co. has been purchasing the oil and using the Prairie Pipe Line Co.'s line to transport the crude to its main line.

A pipe line was completed in 1931 by the White Eagle Oil & Refining Co., a subsidiary of the Standard Oil Co. of New York, from the White Eagle's refinery at Augusta, in Butler County, to the Ritz-Canton area in McPherson County. The construction of the pipe line was started in July and completed in September. It is approximately 70 miles long and is a 6-inch line. The line was routed directly south of the Ritz-Canton Field, passing east of the Mound Ridge in northern Harvey County, south to Valley Center, where it connects with a line that was in operation which ran east and west to the company's tank farm and thence to the refinery.

Phillips Petroleum Co. completed a 6-inch line from its Thrall station in Greenwood County to the Ritz-Canton Pool in McPherson County. The line was completed in October and increased the outlet of the field approximately 5,000 bbls. a day.

The Texas Pipe Line Co. completed a line which connects the Ritz-Canton Pool to the Voshell Pool, both in McPherson County. The line is 4-inch and increases the company's outlet from its own leases. At the Voshell Pool it connects with the Empire Oil & Refining Co.'s line. It is 15 miles long.

The Skelly Oil Co. constructed an 8-inch pipe line from the company's refinery at Eldorado, in Butler County, Kansas, to its pump station near Valley Center in Sedgwick County. The pipe line will handle oil from the Rits-Canton Pool in McPherson County, and be approximately 30 miles long. The construction was awarded to Truman-Smith Construction Co. The work was started in December and completed January 2. The line will connect with Skelly Oil Co.'s pipe line that extends from the Valley Center Pool north to Ritz-Canton Pool. The oil was formerly switched at Valley Center to the Empire Oil & Refining Co.'s pipe line and transported to the refinery at Eldorado. The new line increases the outlet of the Ritz-Canton Field by giving Skelly Oil Co. a direct pipe line from the field to its refinery.

Rocky Mountain Lines

The only oil pipe line construction in the Rocky Mountain area in 1931, with the exception of a few short connections with existing lines, was a line built by the Continental Oil Co. from the Greasewood Field in Weld County, Colorado, to Hardin, on the Union Pacific Railroad. This line is 16 miles long and consists of 4-inch pipe. The plans call for the extension of this line on into the Denver refinery of the Continental Oil Co. when production warrants the undertaking. A 15-car loading rack was built at Hardin, from which point the crude is shipped to Denver by rail.

The Illinois Pipe Line Co. built a short extension from its Byron line in Big Horn County, Wyoming, to the producing wells on the Garland Dome, and a short extension of its Osage line in Weston County to wells completed in the western extension of the Osage Pool.

Pipe Lines in Michigan

More than 100 miles of new pipe lines for crude oil or natural gas was laid in the Mount Pleasant area of central Michigan during 1931, at an aggregate cost of about $500,000.

Three new oil lines to transport crude from production to refineries or railroad loading racks and two new gas lines were laid by five different companies.

The largest single project was the Consumers Power Co.'s 8-inch line extending from the Broomfield Township gas area about 43 miles to Midland through Mount Pleasant.

The Gas Corp. of Michigan laid 11 miles of 4-inch between Clare and Mount Pleasant to replace an old 2-inch line with which they began serving these communities early in the year.

The Pure Oil Pipe Line Co. laid 16 miles of 3 and 4-inch lines from Vernon Township to its Greendale Township tank farm.

The Roosevelt Oil Co. operators of a refinery in Mount Pleasant, extended its 4-inch line from the original Isabella-Midland Field to the east pool, a distance of about 5 miles.

The Peerless Oil Co. laid a small line 14 miles south of the new east pool to the village of St. Louis, and the Great Western Pipe Line Co. laid a 2-inch line from the east pool to loading racks in Shepherd.

The White Star Refining Co. of Trenton, near Detroit, bought 500,000 bbls. of crude from the McClanahan interests near the close of the year and was reported to be considering construction of another pipe line.

Sale of the entire holdings of the Empire City Service Corp. to the Dokendar Gas Corp. and associates of New York City was announced on December 29, with the statement that the latter corporation might lay a new $10,000,000 pipe line to carry gas from the Mount Pleasant Field to Chicago. Building of a 10 or 12-inch oil pipe line to the Whiting, Ind., refining region also is being considered, it is reported.

Little Done in West Texas

The only pipe line construction done in West Texas during the year was as follows: Twenty-eight miles of gas line from the Pecos Valley Pool to Fort Stockton, the Pecos Valley Pipe Line Co. now extending this line on to Alpine and Marfa to supply those two towns with gas.

Louisiana-Arkansas Lines

Four pipe lines were constructed in the Louisiana-Arkansas division in 1931, all of them extending from Shreveport and vicinity to the East Texas Fields.

The Standard Pipe Line Co. of Louisiana constructed two 10-inch lines from its Moore Station pumping plant and tank farm, 5 miles southwest of Shreveport, to the Texas line toward Marshall, a distance of 12 miles. From this point the lines were continued into the East Texas fields, including a complete gathering system, by the Humble Oil Co. A booster station near Marshall, Tex., called the Marshall Station, was constructed to serve both lines. The lines are acetylene welded and have a daily capacity of 45,000 bbls. each. At Moore Station they connect with the main trunk lines of the Standard leading to the Baton Rouge refinery, and this point is also connected with vast steel storage in North Louisiana and Arkansas.

The first part of May saw the completion of the Arkansas Pipe Line Co.'s 8-inch line from Shreveport to Longview. The line, which is acetylene welded, is 70 miles in length and has a daily capacity of 30,000 bbls. It connects with the Louisiana Oil Refining Corp.'s Gas Center and Bossier City refineries, which have a combined daily capacity of 18,000 bbls. This company has also had an agreement during the year with The Texas Company for the use of the latter's 8-inch line from Ardis, near Shreveport, to Port Arthur, Tex. From the latter point the crude was loaded on Cities Service tankers for shipment to the eastern seaboard. The Arkansas Pipe Line Corp. and the Louisiana Oil Refining Corp. are subsidiaries of the Cities Service group.

In addition to the 70 miles of main line, 51 miles of gathering lines, ranging from 4 to 8 inches, was constructed in the three fields of East Texas. Approximately 16 miles of these gathering lines is 4-inch, 28 miles of 6-inch and 9 miles of 8-inch. These field gathering lines connect with the Caster pump station, located on the Hamilton McNutt Survey, northwest of Longview. The booster stations in the fields are equipped with electrical pumps. The Caster station is equipped with two Prescott type reciprocating pumps, and two Bruss-McBeth gas engines of 200 horsepower each, furnish the power for this station. Since its completions two electrical pumps have been installed. A midway booster station was erected 3 miles north of Scottsville, Tex. This station is electrically equipped.

The Atlas Pipe Line Co., a subsidiary of the Spartan Refining Co., Inc., completed an 8-inch electrically welded line from Shreveport to the East Texas fields early in May. The line is 57 miles long, running from the plant of the Spartan Refining Co., Inc., near Shreveport, to the company's tank farm, 2 miles south of Longview. The trunk line has a maximum capacity of 25,000 bbls. daily and was built at a cost of approximately $1,000,000. In addition to the main trunk line, the company also constructed 31 miles of gathering lines extending into the three pools of the East Texas Field. Booster and pump stations were erected as a part of this system at advantageous points.

Eastern Trunk Lines

There were no new crude oil transportation lines laid or any major construction systems contemplated during the past year. The one pipe line change which involved considerable outlay was the redesign of the National Transit Co.'s 6-inch line from Marcus Hook, Philadelphia, north to Colegrove, Pa., and thence to Franklin via Turkey Junction and from the same point to Pittsburgh. This line is an old Mid-Continent crude oil line now in reverse direction, and had a capacity of about 5,300 bbls. a day and has been used for the past year for delivering Texas crude received at Marcus Hook via tankers from the Gulf route to the Atlantic Refining Co.'s refineries at Franklin, Pa., and Pittsburgh, Pa. The National Transit Co. increased the capacity of this line to 10,500 bbls. a day with the installation of six new 150-horsepower pumping units, using pumps of their own design driven by General Electric motors with the exception of one station which uses a 150-horsepower Fairbanks-Morse oil engine. The new stations are Chester, near Chester, Pa.;

(Continued on Page 104)

TRUNK LINES OUT OF EAST TEXAS DISTRICT

Company and location—	Size	Length	Capacity
Arkansas P. L. Co.—Longview station to Shreveport	8	66	30,000
Atlantic P. L. Co.—Kilgore station to Atreco	10	180	30,000
Atlas P. L. Co.—Footes station to Shreveport	8	57	30,000
Gulf P. L. Co.—Lathrop station to connect to main line at Big Sandy station in Upshur County	6	17	20,000
Gulf P. L. Co.—Kilgore station to connect to main line NW of Overton	6	12	20,000
Gulf P. L. Co.—Kilgore station to connect to main line SW of Overton	8	8	42,000
Humble P. L. Co.—Kilgore to Groesbeck (doubled for 28 miles to Todd station, looped from Todd to Groesbeck station)	8	35	60,000
Humble P. L. Co.—Longview station to Moore station on Standard P. L. Co.'s line in Louisiana	2-10	60	90,000
Liberty P. L. Co.—Kilgore station to Rusk station in Cherokee County on Pure-Van P. L. Co.'s 16-in. main line.	8	45.6	27,500
Magnolia P. L. Co.—Kilgore station to Center station in Shelby County on Arkansas-Gulf Coast main line	10	58	30,000
Magnolia P. L. Co.—Carthage to Center station	6	28	15,000
Magnolia P. L. Co.—Kilgore station to Corsicana station on main line to Beaumont	12	100	60,000
Shell P. L. Co.—Kilgore station to Houston	10	198	40,000
Sinclair-Texas P. L. Co.—Joiner station SE of Arp to Colonel's station near Mexia, connecting to Prairie P. L. Co.'s Mid-Continent-Gulf Coast main line	12	88	80,000
Sun P. L. Co.-Yount Lee P. L. Co.—Troup station to Sun City on Gulf Coast	10	200	45,000
The Texas P. L. Co.—Joiner station to Douglass station in Nacogdoches County	10	50	55,000
The Texas-Empire P. L. Co.—Gregg County to Port Arthur	12	200	75,000
Total		1,491	749,500

INDEPENDENT PIPE LINE COMPANIES' GATHERING LINES IN EAST TEXAS

Company and location—	Size	Miles	Estimated capacity
Burton Drilling Co.—Kilgore Pool to Kilgore rack	4	4	8,000
Butler-Calhoun—Joiner Pool to Overton rack	4	6	8,000
Central P. L. Co.—Joiner Pool to Overton rack	6	7	12,000
C. & P. Oil Co.—Joiner Pool to Henderson rack	4	7	8,000
Cranfill-Reynolds—Kilgore Pool to Longview station	4	15	8,000
Cranfill-Reynolds—Tank farm to I.&G.N. R.R. Stg.	8	1	15,000
Cranfill-Reynolds—I.&G.N. R.R. tanks to Longview rack	6	2	10,000
Crown Central P.L.—Joiner Pool to Friar rack	6	4	10,000
East Texas Ref. Co.—Joiner Pool to Friar rack	6	3.5	10,000
East Texas Ref. Co.—Joiner Pool to Friar rack	4	3.5	8,000
East Texas Ref. Co.—Kilgore Pool to Longview station	6	12	10,000
East Texas Ref. Co.—Longview district to Longview station	4	4	8,000
F. & M. Transporting—Longview district to Camp Switch rack	6	3	12,000
Hunter, Nat (Gulf Coast P. L.)—Kilgore Pool to Texas P. L. Ter.	4-6	3	8,000
Inland Waterways P. L.—Joiner Pool to Friar's Switch	4	4.5	8,000
Indian State Oil Co.—Kilgore Pool to Kilgore	6	1.5	10,000
Inland Waterways P. L.—Joiner Pool to Friars Switch	4	3.5	8,000
Marine Corp.—Kilgore Pool to Kilgore rack	4	0.5	8,000
Macmillan Pet. Corp.—Lathrop Pool to Camp Switch	4	4	8,000
Oriental Oil Co.—Kilgore Pool to Kilgore rack	4	1	8,000
Panola P. L. Co.—Joiner station to Friar's Switch	6	3.5	10,000
Panola P. L. Co.—Joiner Pool to Friar's Switch	4	6	8,000
Petroleum Marketing Co.—Joiner station to Friar's Switch	6	4.5	12,000
Petroleum Marketing Co.—Kilgore Pool to Kilgore rack	6	1.5	8,000
Pilot Oil Co.—Lathrop Pool to Willow Springs	6	5	12,000
Pilot Oil Co.—Joiner Pool to Norfork spur	4	1.5	8,000
Superior Oil Co. of California—Gladewater area to Gladewater	6	..	.....
Sabine P. L. Co.—Kilgore Pool to Reed spur	4	3	8,000
Southport Refining & Exporting Co.—Gladewater	6-8	..	.....
Tyler P. L. Co.—Overton pump station to Tyler station	8	19	20,000
Tyler P. L. Co.—Kilgore Pool to Overton station	4	7	8,000
Tyler P. L. Co.—Joiner Pool to Overton station	6	6	10,000
Wooley Pet. Co.—Kilgore Pool to Kilgore rack	4	1	7,500
Toronto P. L. Co. (Brit. Am. P. L. Co.)—Kilgore Pool to Overton rack	4	5	8,000
Toronto P. L. Co. (Brit. Am. P. L. Co.)—Kangerga tanks to Overton rack	6	5	12,000
Total		157	316,500
Total miles pipe lines			157
Total estimated capacity, barrels			316,500

Markets Opened to Rich Gas Fields

Immense Programs of Gas Pipe Line Building Successfully Put Through in 1931 in Many Parts of the Country

Gas production in the Texas Panhandle is burned in households in Indianapolis, Ind., 1,600 miles distant, and in South Dakota and Minnesota towns and points along the lines. Kentucky gas is burned in the nation's capital and New York City and Boston, Mass., may eventually be served with fuel produced in Tioga County, Pennsylvania.

Last year was an important one in the business of laying big natural gas lines to bring to market the immense wealth of isolated gas fields. It saw the completion of the longest gas line in history from the fields of Amarillo, Tex., to central Indiana, crossing a corner of Oklahoma, and all of Kansas, Missouri and Illinois, successfully coping with river crossings and overcoming all other obstacles.

Panhandle to Chicago

The 950-mile 24-inch gas line the Continental Construction Co. built for the Natural Gas Co. of America was completed August 5, 1931, from the Texas Panhandle fields to Chicago, Ill. The first gas was available in Chicago on August 5. The construction work on most of the gathering lines was completed about the same time. The last link of the line was completed from Joliet, Ill., to the Mississippi River. Permanent operating headquarters were established in Chicago on July 15, and the final construction work was directed from that point. The compressor stations were also tested and put into operation at the same time the line was completed.

The construction of a second line or loop was contemplated by the Continental Construction Co. of either 24 or 30-inch pipe. The building of the second line will depend upon the rate at which the load of the present line can be connected and markets expanded. The single line has a capacity of 200,000,000 feet a day and the company was sending through approximately 175,000,000 feet a day late in the year. A survey has been made and rights of way obtained for an extension to Milwaukee, Wis. This branch line will be approximately 170 miles long.

Longest Gas Line

Panhandle Eastern Pipe Line Co., which is now owned half by the Northern Gas & Pipe Line Co. and half by the Columbia Oil & Gasoline Co. is constructing a 24-inch gas pipe line from the Texas Panhandle to Indianapolis, Ind., which was completed to the Illinois-Indiana state line, on January 1, 1932. When the line is complete it will be the longest 24-inch pipe line transporting natural gas in the United States, a distance of 1,200 miles. All the major river crossings have been completed.

The main line starts in the Texas Panhandle and enters Kansas near the town of Liberal, in the southwestern part of the State, passing between Wichita and Newton running north and east across Missouri, crossing the Mississippi River near Louisiana, Mo. Approximately 75 towns and cities are to be served from an estimated possible throughput of 130,000,000 feet of gas per day. The builders of the line also expect to draw gas from wells in the Hugoton gas field in the southwestern part of Kansas.

Line to Minnesota

Northern Gas & Pipe Line Co., formerly the Missouri Valley Pipe Line Co., completed a total of approximately 1,855 miles of pipe line up to January 1, 1932, of which 1,099 miles was main line and 756 miles branch line. The pipe line also starts in the Texas Panhandle and runs northeast with a branch extending to the Hugoton gas field in southwestern Kansas. It crosses Kansas, southeastern Nebraska, western Iowa, and extends as far north as Owatonna, Minn.

The company serves 96 towns and cities located as follows: Nebraska 61, Iowa 27, Kansas 15, Minnesota 5, and South Dakota 1.

Numerous Short Lines

The Western Service Corp., of Butler, Mo., completed 110 miles of different sized pipe from Trading Post, Kans., to Butler, Mo. The completed line consisted of 53 miles of 8-inch and 57 miles of 4-inch pipe, these lines will supply natural gas to seven communities from Butler, Mo., to Deepwater and from Deepwater to El Dorado Springs, Mo. The project was an extension from the companies' gas line at Pleasanton, Kans.

The Panhandle Power & Light Co. completed approximately 75 miles of 6-inch gas line during the year from Dumas, Tex., to Boise City, Okla.

A 50-mile gas line was constructed from Eureka, Kans., to the gas fields in eastern Elk and Chautauqua Counties in the same State by the Mid-State Pipe Line Co. The main line was 6-inch and the gathering lines of varied diameter. Attempts to find good-quality gas near Eureka have failed, but Elk and Chautauqua County gassers produce a gas of 900 to 1,500 B.t.u. The gas was transported to Eureka and sold to the Western Natural Gas Co., the holder of the Eureka franchise and of others in the vicinity.

Kansas Power & Light Co. completed a 7-mile extension from its main line north of Topeka, Kans., to its power plant near Topeka. The company was granted a lease of the Stanolind Pipe Line Co.'s line from a point in Nebraska to the Missouri state line and uses the line as a natural gas pipe line. The capacity of the line is estimated at 14,000,000 feet a day.

The State Fuel Supply Co. completed 8½ miles of 4-inch gas pipe line from the Sinclair Oil & Gas Co.'s wildcat gas well in Section 14-26-24w, Harper County, Oklahoma, to the town of Laverene, Okla. The company was granted a franchise and it also completed the piping of the town shortly after. Another franchise was secured in Buffalo, Okla., and the line was extended to that town.

West Texas Short Line

The Texas Public Service Co. laid 74 miles of 12-inch line from the Big Lake Field, Reagan County, to San Angelo, and 40 miles of 8-inch gas line from the same field west to the Pecos Valley Power & Light Co.'s power plant on the Pecos River near Girvin. The towns of Rankin and McCamey and Big Lake tied into these two main lines, and are taking gas from same. The sweet gas comes from the deep pay formations in the deep producing wells in the field.

In Rocky Mountain Lines

The principal natural gas pipe line construction in the Rocky Mountain states in 1931 was in Wyoming and Montana, where two major systems were completed and several smaller lines were built. Only a few extensions of existing lines were constructed in Colorado and New Mexico.

In Wyoming, the major project was the construction of a line from Glenrock, east of Casper, to Bridgeport, Neb., with several laterals, by the North Central Gas Co., a concern closely affiliated with the New York Oil Co. This system starts at Glenrock, where it connects with the gas line of the New York Oil Co. from the Big Sand Draw and Muskrat Fields in Fremont County. A 10-inch 18-mile line was built from Glenrock to a connection with the old Sinclair oil pipe line from Teapot Dome to Freeman, Mo. This line was leased by the North Central company for its entire distance of 270 miles and 178 miles of line from the Clayton tank farm near Glenrock to Bridgeport was converted from an oil to a gas carrier. The Sinclair line was built by the Sinclair Pipe Line Co. and subsequently passed to the complete control of the Standard Oil Co. of Indiana. The system, through the construction of laterals, or connection with the main line, serves Douglas, Guernsey, Fort Laramie, Lingle and Torrington, in Wyoming, and Morrill, Broadwater, Oshkosh, Lewellen, Lisco, Henry, Bayard, Chadron and Bridgeport, in Nebraska. Four of these towns are east of Bridgeport. The cost of the project was approximately $6,000,000. The gas is taken from the Big Sand Draw and Muskrat gas fields in Fremont County in western Wyoming through the New York Oil Co.'s 10-inch line to Glenrock. The two gas fields are operated by the Producers & Refiners Corp., a subsidiary of the Prairie Oil & Gas Co.

The only other project reported completed in Wyoming was a 9-mile 8-inch line built from Buffalo Basin to serve the town of Meteetse, in Park County, by the Ohio Oil Co., as a part of its larger system.

C. E. Bivens and Marvin James and associates, of Denver, Colo., were granted a permit to build a line from the Baggs Dome, in southwestern Carbon County, where the same interests have some gas production, to Laramie. The line will be approximately 133 miles long and consist of 8-inch pipe. Towns to be served include Saratoga, Rock River, Bosler and Laramie, and possibly Cheyenne. Headquarters have been established in the Midland Savings Building in Denver and it is planned to build the line in 1932.

Montana's Long Lines

The principal project completed in Montana was the construction of a line from the Cut Bank gas field in Glacier County to Anaconda, Helena, Butte and intermediate cities by the Montana Power Co., a subsidiary of the Electric Bond & Share Co. The system, which cost approximately $12,000,000, included 199 miles of 20-inch pipe; 16 miles of 16-inch; and 8 miles of 12-inch, exclusive of short laterals which brought the total up to about 243 miles. It crossed the backbone of the Rockies and through scores of miles of solid rock. The altitude of the line varied from a minimum of 3,125 feet to a maximum of 5,825 feet. The Montana Power Co. acquired from L. B. O'Neil his pipe line rights and property interests in the Cut Bank Field and during the year 16 wells were drilled with an initial open flow capacity of 226,910,000 feet per day. The system was built primarily to supply gas to the smelters and mines in the Butte-Anaconda district.

The Montana Power Co., also acquired and completed early in the year a project under construction by the Ohio Oil Co. from the Dry Creek Field, in Carbon County, southern Montana, to Livingston and Bozeman. This unit is 118 miles long and was constructed at a cost of $3,000,000. In addition to the towns named, it serves Big Timber, Columbus and one or two other points. The gas is purchased from the Ohio company at its Dry Creek wells. The Phoenix Utilities Co., a subsidiary of the Electric Bond & Share Co., had the contract.

The Lewistown Natural Gas Co. is completing a 100-mile 4-inch line from the Armells structure to Lewistown, Moore, Judith Gap, Hobson and Harlowtown. The Skaggs Construction Co., of Fort Worth, Tex., has the contract. The project also includes a 30-mile line from Hanover to Coffee Creek, Denton and Stanford.

Projected Lines

Several projects for construction in 1932 are under consideration. Jerome K. Drumheller and associates, of Spokane, Wash., recently applied to the Idaho Public Utilities Commission for a certificate for a line from the Cut Bank Field, in Glacier County, Montana, where these interests have a producing well, across northern Idaho, to Spokane. The commission was requested to grant ample time for making surveys and acquiring right of way before beginning construction.

The Montana-Dakota Power Co., a subsidiary of the Minnesota Northern Power Co., has applied to the North Dakota authorities for permission to build a 100-mile extension from the present terminus of its line at Williston, Mont., to Minot, N. Dak.

In Colorado, the Colorado Interstate Gas Co. made a contract with the officials of Colorado Springs, Colo., which has a municipally-owned distribution system, to supply it with gas at the city gate and constructed a 10-mile 8-inch line from its trunk line east of the city to a connection with the municipal system.

The Colorado-Wyoming Gas Co., a sub-

CONSTRUCTING A PIPE LINE IN TEXAS

sidiary of the Cities Service Co., built a 17-mile 4-inch line from a connection with its system near Lafayette to Brighton, a 6-mile 4-inch line to Fort Lupton and a 1-mile connection with the town of Longmont.

The Ohio Oil Co., has obtained a franchise to serve the town of Craig in Moffat County, Colorado, and is drilling a well 3 miles away in an effort to develop a gas supply. Upon the outcome of this well probably will depend the construction of the system.

In New Mexico, there was no new construction reported. The city council of Las Vegas has granted the Albuquerque Natural Gas Co. a 10 months' extension in which to complete its gas line into Las Vegas and this probably will be constructed in 1932.

Mississippi Lines

The Mississippi Industrial Gas Co., a subsidiary of United Gas, completed a 6-inch electric welded line from Jackson, to McComb, Miss., in February of last year. The line is 81 miles in length with a capacity of 12,000,000 feet daily. It is supplying several towns along the route in addition to McComb.

The Public Service Corp. of Mississippi constructed an 8⅝-inch (O. D.) line from Jackson to Hattiesburg, a distance of approximately 90 miles. This line was acetylene welded.

There were also some short connecting lines constructed in southeast Louisiana by the United Gas Public Service Co. from the main line to Mobile and Pensacola, which connects with the Southern Natural Gas Co.'s Birmingham-Atlanta line south of Yazoo City, Miss. These short lines connected up the towns of Bogalusa, Hammond, Slidell and Covington.

Eastern Gas Lines

In the lower Eastern fields, the largest gas line which has been projected in recent years in now completed and in use. It is the 20-inch line of the Columbia Gas & Electric Co., now formed into a separate gas transmission company with ownership divided—Columbia Gas & Electric 70 per cent and Standard Oil Co. of New Jersey 30 per cent, and extends from eastern Kentucky where the Columbia owns considerable acreage and has contracted for a large output of independent companies, through West Virginia, Virginia and Maryland, connecting with its present line from Rockville, Md., to Washington, D. C. Rockville is connected north by a similar sized line to the extension of the old Southern Pipe Line Co. line, previously acquired, at Coatesville, Pa., and thence west along the southern Pennsylvania border to points in northern West Virginia. It is estimated that the new Virginia line is supplying about 7,000,000 feet a day to the nation's capital and en route to many cities and towns, among which are Lexington and Covington, Ky., and Clifton Forge in Virginia. Work preparatory to gas distribution in many other cities en route is rapidly being done, and pipes are being laid. The old southern Pennsylvania line is used for gas distribution to towns in Pennsylvania. Hooking up with this general system, the Maryland Gas Transmission Co. is distributing gas in the State of Maryland to local distributing companies and an additional market is found there.

This project, with additions, is part of the general scheme of, sometime in the future, supplying the larger seaboard cities in the East with natural gas. It is a project which would have been pushed to a more close completion if the present depression had not halted it and had the financial markets been free from strain.

Lines From New Fields

Syracuse, N. Y., and cities en route will be supplied with natural gas from the prolific fields of Tioga County, Pennsylvania, and the Dundee-Wayne Fields in Schuyler and Yates Counties, New York, when the Lycoming Natural Gas Co.'s big line from the fields named is completed. This project was started last year. The line will be 110 miles long and made up of 20-inch pipe. It is expected the gas will be mixed with manufactured gas already long in use in the cities en route. Another outlet for Tioga County gas was started last year when the Pennsylvania Light & Power Co. through its subsidiary, the Susquehanna Gas Co., began construction of a 60-mile line to Williamsport.

In Kentucky the Missouri-Kansas Pipe Line Co. completed a line from Pierce, Green County, Kentucky, to Bowling Green, Warren County, in the same State. It is a 40-mile 8-inch line.

Kettleman Hills to Long Beach

Gas pipe line building in California last year was confined mainly to the laying of the Southern Fuel Co.'s 26-inch line from Kettleman Hills to Long Beach, a distance of 210 miles. This line has a peak load capacity of 150,000,000 feet of gas per day. The line is said to have cost approximately $7,000,000. The line was completed late in the year.

Long Line on Gulf Coast

Gas line construction on the Gulf Coast during 1931 was confined largely to expansion of the United Gas system which has just virtually completed a $20,000,000 expansion program started in 1930.

The most important project was the laying of 446 miles of pipe, ranging from 14-inch down to 2-inch, in southwestern Louisiana. The main trunk line of this system, which takes natural gas to nearly all the principal towns and industries of that part of the State, extends from a point near Kirbyville, eastern Texas, to Franklin, St. Mary Parish, Louisiana. Six branch lines lead off this trunk, reaching various important districts. At Kirbyville, the trunk line ties into the 18-inch Northeast Texas-Beaumont trunk line of the Magnolia Gas Co., another unit of the United Gas system. Pipe laid on the system included 46 miles of 14-inch, 16 miles of 12-inch, 53 miles of 10-inch, 30 miles of 8-inch, 116.5 miles of 6-inch, 66.5 miles of 4-inch, 95.5 miles of 3-inch, and 22.5 miles of 2-inch.

A second southern Louisiana project by the United Gas system was the laying of 92.93 miles of line from Bogalusa to Covington, Slidell, Pontchatoula, Hammond, Independence and Amite in Washington, St. Tammany and Tangipahoa Parishes. This system consisted of 26.18 miles of 8-inch, 45.33 miles of 6-inch, 15.77 miles of 4-inch and 5.55 miles of 3-inch pipe. At Bogalusa, these lines connect with the company's 10-inch trunk to a connection with the Jackson, Miss.-Pensacola, Fla., system.

In coastal Texas, the United Gas system, through subsidiaries, completed looping its Refugio-Houston system with 16-inch pipe, increasing the capacity of the system to 100,000,000 feet daily. This trunk is approximately 150 miles long.

The same company also put in another system extending from the Boggy Creek Field on the Anderson and Cherokee County line, East Texas, south to Huntsville, a distance of 100 miles. The trunk was 6-inch pipe and originally served 10 important cities. Since completion of the line additional connections have been laid. This system is separate from the extensive system of lines which the company put in over the new East Texas Field, linking virtually all cities and communities in that and immediately surrounding areas and providing natural gas as fuel for industries and oil field use.

Little Work in Canada

Gas pipe line construction in Canada in 1931 did not keep pace with the work of the several years previous. There were lines under project that did not materialize and the actual work was confined to minor construction.

Union Natural Gas Co. laid a short line from its producing area near the Haldimand-Norfolk County line in Ontario, to Hamilton, where production was used to supplement the artificial gas supply of the United Gas Co. and others.

Southern Ontario Gas Co. secured a rural and summer resort franchise and constructed a small transmission and distributing system in Sarnia Township. This company also secured a franchise for Yarmouth Township, near St. Thomas, which involved a small extension.

In western Canada no important work was undertaken.

The Canadian Western Natural Gas Co. of Calgary continued work on its project of storing the surplus Turner Valley gas in the depleted sands of the Bow Island Field.

Gasoline Pipe Lines Prove Success

Refiners Put Through Long Thought Out Project of Direct Refinery to Market Underground Transportation

The refining industry in America took a step forward in swift and economical distribution of its products to market when it started and completed, and put into successful operation, a number of large-caliber pipe lines from refineries to distant marketing centers.

Thus the Texas Panhandle was connected with St. Louis Mo., and Oklahoma and Kansas refineries shipped direct to Chicago, St. Paul and other distant cities as well as to marketing centers en route, and Marcus Hook, on the Delaware River, was connected with Syracuse, N. Y.; Pittsburgh, Pa., and Cleveland, Ohio.

It was another case of doing something which "can't be done." The idea was pondered and discussed for many years, meeting with many objections. It was finally tried out, and succeeded, just as the famous kerosene line of the United States Pipe Line Co. succeeded 40 years before, and as the crude oil pipe lines succeeded many years before that, both in the face of like opposition put forward as mechanical and mathematical reasons why such transportation was "impossible."

Mid-Continent Lines

The Great Lakes Pipe Line Co. completed its 6-inch gasoline pipe line from Barnsdall, Okla., by the way of Kansas City, Mo., and Des Moines, Iowa, to Chicago, Ill., in July, 1931. The first part of the gasoline line was completed earlier in the year from Barnsdall, Okla., via Kansas City, Mo., to Des Moines, Iowa, and the company was running gasoline through that part of the line. The line was also extended north from Des Moines, Iowa, to Minneapolis and St. Paul, Minn., and to Council Bluffs, Iowa, and Omaha, Neb., and the extension from Chicago to Milwaukee was completed.

The pipe line, owned by the Barnsdall Oil Co., Continental Oil Co., Skelly Oil Co., Phillips Petroleum Co., Mid-Continent Petroleum Corp., and Pure Oil Co., is the longest gasoline pipe line in the world. The line consists of 4, 6 and 8-inch pipe and is estimated to have a capacity of 30,000 bbls. a day. It has gathering lines to the refineries owned by the above companies, including extensions to various points of consumption. The line altogether is 1,400 miles in length.

It is estimated the cost when fully completed will be upwards of $17,000,000. Distributing stations on the line are being erected at intervals of about 60 miles. At these points gasoline is drawn from the line into tanks and distributed by trucks and trailers to points within a radius of 50 miles on both sides of the line.

Panhandle to St. Louis

Phillips Petroleum Co.'s gasoline pipe line from Borger, Tex., to East St. Louis, Ill., a distance of 800 miles, was completed and opened August 5, 1931. The construction work on the line was delayed, the schedule originally calling for completion by February 1, 1931. By reason of a lengthy fight waged by landowners in St. Louis County to prevent the pipe line from crossing their properties, and labor troubles at the East St. Louis terminus, delayed the completion of the line six months.

The company started the experimental work about three years ago to determine the feasibility of transporting nonviscous liquids through pipe lines. After a careful investigation it was decided to construct the line. Further investigations disclosed that it was possible to ship separate consignments of different kinds of gasoline, straightrun, cracked gasoline, and natural gasoline to any point along the 800-mile pipe line.

Nine pumping stations were completed along the main line right of way and plans were made for six additional stations which will be constructed when the market expands. The present pumping sites completed and in operation are located at Borger, Tex.; Speermore, Okla.; Crystal Springs, Wichita, Aikman and Osawatomie, Kans.; Harrisonville and Jefferson City, Mo., and East St. Louis, Ill.

To fill the line the refinery at Borger, Tex., and the natural gasoline plants operated in the Texas Panhandle, by the company pumped in 232,000 bbls. of their products. This fluid moving at the rate of 3.5 miles per hour, traveled eight days before it reached the East St. Louis, Ill., end of the line.

The present market terminals are located at Wichita, Kans.; Kansas City, Mo., and East St. Louis, Ill. The company has been using trucks to supply intermediate points until increased operations show the need for more bulk stations. The river transportation facilities open at the East St. Louis end of the line, give the company the opportunity of expanding to the north, south and east.

West Texas Line

The Phillips Petroleum Co. laid 25 miles of 3-inch welded line from its casinghead gasoline plant at Crane City, in Crane County, to a loading rack on the Santa Fe Railroad at McCamey, to transport casinghead gasoline from the plant, and ship out by tank car from McCamey.

Eastern Lines

In the first half of the year, the Sun Oil Co., through its subsidiary, the Susquehanna Pipe Line Co., completed its gasoline system from Philadelphia, Pa., to Cleveland, Ohio. From Marcus Hook, this line follows closely the route of the old Crescent Pipe Line Co. to a delivery point in the neighborhood of Pittsburgh, Pa., and thence west through Ohio to Cleveland. The line is in daily use and has a capacity of 15,000 bbls. Later in the year the northern branch from Marcus Hook north across the State, and into New York State, with intermediate delivery points, has been completed, and connects with the Sun Pipe Line Co. of New York, through which gasoline is now delivered to Syracuse, N. Y., and other delivery points en route.

Another eastern gasoline pipe line system has been placed in operation with the start of shipments through the new line of the Keystone Pipe Line Co., a subsidiary of the Atlantic Refining Co. This line, which connects with several delivery points in eastern Pennsylvania is in operation between the Point Breeze, Philadelphia, refinery of the Atlantic Refining Co. and two terminals located at Montello and Mechanicsburg, Pa. A part of the line nearly completed as the year closed, extends as far north as Kingston, Pa., and a branch line to Fullerton, Pa. It is in operation.

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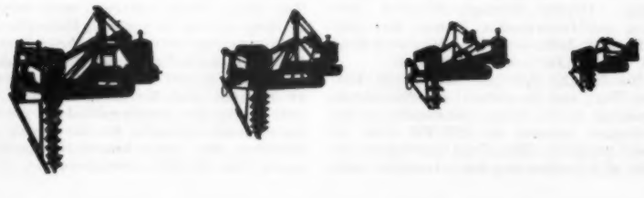

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Poor Year Is Experienced By California

Despite Decreased Drilling, Curtailed Production and a Draft on Stocks, Crude and Refined Oil Prices Were Low

By L. P. Stockman

The year 1931 was full of trouble as far as California is concerned for, in spite of decreased drilling, a lower rate of production and a substantial draft on stocks, the refined oil market was in a turmoil all year. Abnormally low prices for crude and refined oils prevailed during practically the entire year and this unfavorable condition brought about a period of general retrenchment and curtailment in all branches of the oil industry.

Crude oil curtailment, although none of several objectives was ever reached, proved an important factor last year with the result that production was substantially lower than the output for any calendar year since 1922, when production totaled 139,626,876 bbls., a daily average of 382,539 bbls. This was the year immediately preceding the deluge of oil resulting from simultaneous development of Long Beach, Huntington Beach and Santa Fe Springs, which fields reached their first peaks in 1923.

California's production record was established in 1929 when the State produced 292,036,911 bbls. of crude oil, an average of 800,101 bbls. per day. Along about the end of 1929, crude oil buyers began to get worried and with no relief in sight were instrumental in formulating a definite curtailment program in an effor to stabilize the price structure and at the same time eliminate the necessity of making any further substantial additions to stocks.

The curtailment program started in 1929 is still in effect with the result that production was kept down to 228,099,890 bbls in 1930 and, aided by a normal decline and restricted drilling, to approximately 188,750,000 bbls. during 1931. It is interesting to note that the same trio of fields, Long Beach, Santa Fe Springs and Huntington Beach, which caused state production to reach its primary peak of 263,728,895 bbls. in 1923, were also responsible for the establishment of a secondary peak which resulted in the existing state production record of 292,036,911 bbls. chalked up in 1929. Deep zone exploitation in these fields was exceptionally successful with the result that the respective production of each in 1929 was within a few million barrels of their initial peak reached in 1923.

Long Beach, with an annual production of well over 30,000,000 bbls., headed the production list during 1931, followed by Santa Fe Springs, Midway-Sunset, Kettleman Hills and Ventura Avenue in the order named. There is a possibility that Kettleman Hills will supplant Long Beach as the premier producer in 1932, although production of the former field during the period in question will be governed by the curtailment program and may consequently be either increased or diminished according to requirements. As a matter of fact, Kettleman Hills has by far the largest potential daily production of any field in the State, and, if it was not for the curtailment program in effect, would have headed the production list during the past year.

Rise of Kettleman Hills

Of interest from a production standpoint was the rise of Kettleman Hills, which increased from a daily production of 22,293 bbls. to 60,000 bbls. per day at the close of the year. The potential daily production of this field, according to conservative compilations, increased from approximately 30,000 bbls. in January, 1931, to 225,000 bbls. at the close of the year. The Round Mountain Field of Kern County, reflecting the completion of several wells and a partial resumption of production, showed a substantial increase from a percentage standpoint but only a negligible amount as far as quantity was concerned as the total annual output during 1931 was less than 250,000 bbls. The Capitan Field, which showed a daily production of 1,016 bbls. per day during January, 1931, was shut in for the balance of the year with the exception of a small amount produced in February and March.

Three New Fields

Three new oil fields were discovered in California during 1931 but none of them had any appreciable effect on state production during the period in question. The three new fields found last year were Gato Ridge, San Miguelito and the middle dome at Kettleman Hills. The middle dome discovery was made by the Petroleum Securities, an E. L. Doheny concern. The discovery well, No. 1 Burbank, has not yet been completed due to mechanical trouble, but to all intents and purposes the existence of production in the middle dome may be credited to 1931. A recent survey indicated a probable hole in the water string and a partially collapsed flow string and the probability that both factors have been responsible for the inability to successfully complete the well in question. No. 1 Burbank, on an initial production test concluded late in 1931, was brought in flowing 1,200 bbls. of 60.1 gravity oil and 1,500 bbls. of salt water. Petroleum engineers ascribe the presence of salt water in this well to either a defective cement job or a hole in the water string above the shoe, although it is not at all improbable that the gray sand cored in the bottom of No. 1 Burbank at 9,332 feet may be the source of this water. When this gray sand was encountered the hole was immediately plugged back to 9,208 feet.

The Gato Ridge Field of Santa Barbara County was discovered by the Barnsdall-Rio Grande interests when their joint wildcat, No. 1 Tognazzini, was brought in on the beam June 26, 1931. This well was subsequently cleaned out and recompleted flowing 1,098 bbls. of 16.2 gravity oil per day from 2,501 feet. This discovery well, which was shut in immediately subsequent to completion, is located on a 371-acre lease in Section 9-8-32. No. 1 Tognazzini, which revealed the existence of production on the Gato Ridge structure, a prominent topographic high in the Los Alamos district of Santa Barbara County, required more than a year from spud to completion. It was started on April 25, 1930, and officially completed June 30, 1931, during which time the hole was carried down to 6,510 feet in compliance with lease requirements and subsequently plugged back to the completion depth, 2,501 feet.

Resourceful Drillers

During the drilling of this well the bit ran into a cavity that for a time seemed to have no bottom. Between 800 feet and the 2,000-foot level the hole lost circulation so often that the matter of keeping drilling mud in it became a real problem. Approximately 10,000 sacks of cement, several tons of cottonseed hulls, sawdust and chemical preparations were used to reinforce the drilling mud which kept disappearing into the fractured shale formation as fast as it was introduced into the well. Finally, in desperation, the drilling superintendent sent out a call for stable manure and hauled in all that could be obtained from stables in that section of Santa Barbara County. This material solved the trouble and permitted a resumption of drilling. The Barnsdall and Rio Grande's discovery is located on a well-defined anticline and is producing from the Pliocene-Miocene contact. The trend of the Gato Ridge anticline is from northwest to southeast, although sharp deflections are visible at each nose as it plunges beneath the floor of the valley.

The Continental Oil Co., discoverer of the Seal Beach Field of Los Angeles Basin and lessee of substantial acreage in the prolific Kettleman north dome, opened up a new oil field at San Miguelito on the major Ventura Avenue anticline about midway between the Rincon and Ventura Avenue Fields late in 1931. The Continental's discovery well, No. 1 Grubb, made an initial flow late in September but was not successfully completed until the middle of November, at which time it was brought in flowing 1,000 bbls. of 29.2 gravity oil per day from 6,750 feet. No. 1 Grubb, the discovery well, is still flowing although production has been pinched back to approximately 150 bbls. per day.

California's Deepest Well

The Chanslor-Canfield Midway Oil Co. was the first operator to drill in the San Miguelito area but failed to develop commercial production despite the fact that its wildcat, No. 2-A Hobson, was carried down to 10,030 feet. This well, incidentally, holds the existing record for deep drilling as it was the first project to be carried down below 10,000 feet and is still the deepest hole to be drilled in California up to the present time. Failing to discover deep production, No. 2-A Hobson was subsequently plugged back to 7,825 feet, from which depth it is pumping approximately 100 bbls. per day. The geographical and geological location of the San Miguelito Field is of special interest because it is located at a strategic interval along the Ventura anticline and fills the gap between the Ventura Avenue and Rincon Fields. The importance of the San Miguelito Field from a production standpoint is still problematical although subsequent drilling may reveal the existence of substantial production. The Ventura anticline is 16 miles long and has a general east-west trend. From the Ventura Avenue Field this perfectly closed major anticline can be traced 8 miles east where it plunges into the Santa Clara Valley, and 8 miles west where it plunges beneath the Pacific Ocean. The Ventura Avenue Field, located in the center of the Ventura anticline, is likewise situated on the highest part structurally. The San Miguelito Field is located 4 miles west of the Ventura Avenue Field, with Rincon 4 miles west of San Miguelito and 8 miles west of the Ventura Avenue Field. Geological formations at Rincon, Ventura Avenue and in the San Miguelito area are quite similar. Present production is obtained in the Pico formation (lower Pliocene) and since the underlying Vaqueros formation (Miocene) has been found unusually productive in the coastal region at Elwood, it is logical to assume it should also be productive along the Ventura anticline if and when it can be reached. No wells lo-

(Continued on Page 122)

CALIFORNIA FIELD OPERATIONS BY DISTRICTS FOR YEAR 1931

Northern Districts—	Oil wells completed— No.	Bbls. daily	Oil wells*— Drlg.	Producing	Abandoned— Drillers	Producers	New rigs
Coalinga	0	0	0	669	1	1	2
Elk Hills	0	0	0	206	0	7	0
Fruitvale	3	1,205	1	18	1	0	9
Kern River	6	965	0	920	0	4	4
Kettleman Hills	23	234,000	14	16	0	0	13
Lost Hills-Belridge	5	11,953	8	172	7	6	4
McKittrick	0	0	1	166	2	10	1
Midway-Sunset	7	1,160	2	1,780	4	17	3
Mount Poso	7	1,250	1	67	3	0	8
Round Mountain	2	555	1	4	4	0	7
Wheeler Ridge	0	0	0	34	0	2	0
Coastal Districts—							
Capitan	2	310	1	1	4	0	0
Elwood	6	14,091	2	45	2	0	6
Rincon	3	1,352	2	33	0	1	1
San Miguelito	1	635	0	0	0	0	0
Santa Barbara	4	888	1	4	1	1	7
Santa Maria	2	1,250	1	172	3	6	1
Summerland	0	0	0	84	2	0	0
Ventura Avenue	25	32,268	10	142	0	1	12
Ventura-Newhall	5	965	6	403	50	4	9
Watsonville	0	0	0	6	0	0	0
Southern Districts—							
Coyote	6	1,130	3	167	0	18	8
Dominguez	7	7,644	2	57	2	1	7
Fullerton	1	50	1	350	1	1	0
Huntington Beach	2	490	1	346	0	7	5
Inglewood	4	998	1	207	0	1	4
Lawndale	0	0	0	7	1	0	1
Long Beach	37	14,062	21	881	25	17	18
Los Angeles-Salt Lake	0	0	0	260	0	0	0
Montebello	0	0	1	168	1	3	0
Newport	2	155	1	2	1	0	2
Playa Del Rey	66	32,520	10	170	11	5	21
Potrero	5	2,336	1	13	3	5	2
Richfield	0	0	0	155	0	10	0
Rosecrans	1	50	1	78	2	13	2
Santa Fe Springs	5	1,657	1	444	3	13	4
Seal Beach	2	115	1	103	0	6	1
Torrance	4	380	1	390	0	16	2
Whittier	0	0	0	170	0	1	0
Miscellaneous drilling	0	0	108	0	120	0	92
Gas Fields—							
Buttonwillow	1	gas	1	0	1	0	1
Dudley Ridge	2	gas	0	0	0	0	2
Goleta	0	0	1	1	3	0	0
Total	246	364,434	207	8,911	238	177	259

*Monthly average.

CALIFORNIA FIELD OPERATIONS BY MONTHS FOR YEAR 1931

1931—	Wells completed— No.	Bbls. daily	Wells— Drlg.	Producing	Abandoned— Drillers	Producers	New rigs
January	39	39,346	225	9,387	13	11	25
February	34	19,146	294	9,295	28	8	44
March	18	6,404	276	9,125	32	36	24
April	17	16,653	269	9,130	18	12	27
May	27	44,915	240	8,995	13	16	16
June	32	62,286	185	8,981	14	7	11
July	18	63,445	180	8,815	10	9	17
August	10	8,510	149	8,712	24	20	17
September	11	7,911	147	8,617	15	23	18
October	13	18,753	151	8,644	13	12	23
November	18	73,159	141	8,624	21	14	16
December	9	3,906	132	8,612	36	9	18
Total 1931	246	364,434			238	177	259
Total 1930	755	584,521			254	320	964
Difference	509	220,087			16	143	705

Will Wildcat in Many States in 1932

Rocky Mountain, Gulf Coast and Southwest Texas Promise to Be the Most Active in Exploratory Field Work This Year

In all the 72 years' history of the oil business there never was a year in which oil producers did not look forward to the time when they would need oil to remain in business. Regardless of the number of flush areas in sight and under development, the work of leasing was kept alive so that when flush fields began to wane the work of prospecting for newer fields could immediately be pursued.

The flood of oil production in 1931 held down wildcatting last year and even resulted in oil companies surrendering many leases in far outlying regions, but with the aid of geophysical instruments manned by trained men the larger companies covered much territory that was found to have good prospects and this acreage was tied up in many states.

Reports from several oil-producing states at the opening of this year indicated a widely spread wildcat play this year especially in the Rocky Mountain, Gulf Coastal and Southwest Texas areas. There will be some wildcatting in the northern areas in California and in western Kansas, and in that part of Oklahoma within 100-mile radius of the Oklahoma City Field much geophysical work has been done and there will be considerable test work done this year.

Oklahoma Program

The future possibilities for oil and gas production in Oklahoma are considered as promising as ever and have been studied seriously by oil companies during the past year with an eye to future crude oil needs. Companies have been going over every prospective area with magnetometers, seismographs and other geophysical instruments. The areas which have been undergoing the surveys are close to producing fields. These areas are located mainly in Payne, Logan, Garfield, Oklahoma, Pottawatomie, Cleveland, Garvin, Caddo, Lincoln, McClain and Grady Counties.

Companies have been quietly securing acreage in these counties on favorable reports from these surveys. The general trend is believed to be within 100 to 150 miles of the Oklahoma City Field. The companies have been releasing acreage in the wildcat areas in the extreme western and northwestern counties of the State in favor of the territory closer to known production.

In the area between Greater Seminole and Oklahoma City, one flush field has been found, the West Chandler Field in Lincoln County. This is believed to have considerable possibilities which can only be determined by future developments. Three horizons have been found productive in the pool, which has only been partially developed.

In Grady County the Chickasha gas field has not been developed to its full possibilities. The gas is found in a shallow formation and many express the opinion that with deeper drilling oil may be found. The adjoining county, Caddo, has considerable future development. During the year several tests have been drilled to deeper formations, which indicate that several deep pay horizons underlie the entire producing area of the field.

Logan County, which has several producing oil areas, is considered favorable for other production. This county is directly north of Oklahoma County and practically all the available acreage is under lease.

Oklahoma County is expected to receive the largest development work during the coming year. This county has the largest producing wells in the State, and the deepest. About 13 miles north of the Oklahoma City Field another producing well was drilled last year and shut in. When the area surrounding the discovery well is developed it may result in another pool of considerable size.

Gulf Coastal Work

On the Gulf Coast, Montgomery and that tier of counties lying along a line just north of the Texas coastal salt dome district is expected to be the center of wildcat activity within the next month. These counties, which are a part of a large virgin territory lying between the Gulf Coast fields and East and East Central Texas, came into prominence during December when a rank wildcat, located in the Theodore Slade Survey, southeast of Conroe, central Montgomery County, was completed as good for 14,750,000 feet of gas and about 100 bbls. of high gravity oil daily. This well, Strake Oil Corp.'s No. 1 South Texas Development Co., was somewhat of a surprise to most operators and for several weeks there was very little trading due to uncertainty of the value of the well and lack of information concerning the territory and doubt as to the trend of production. However, the well has definitely established itself as an important discovery and considerable leasing is under way. The well is in a sand at a total depth of 4,991 feet and is believed to be in the Dibollensis zone at the base of the Jackson or in the upper Yequa, the same as in the Pettus Field, Bee County, in Southwest Texas, and which has been definitely traced for over 300 miles in a well marked trend down the coast. On the same trend of play is the Raccoon Bend Field and a number of others in the lower coastal country. As this trend has been identified by the Strake wildcat as existing through Montgomery County, the possibilities of development of major production along it in that territory have renewed interest there. Although the Strake interests have 8,000 acres around their well, the uncertainty of the extent or direction of production makes all that territory along the trend favorable, and leasing is not only taking place around the Strake block in Montgomery County but is extending in a general line eastward through southern San Jacinto County and northern Liberty County, and on into Polk County.

Although all the numerous geophysical salt dome prospects, many of which never have been drilled or have had only one or a few tests so far, are potential wildcat territory of importance on the Gulf Coast, the majority of these are in controlled hands and whatever development is done will be on a conservative and systematic program of operation, and unless there is a sudden change in the oil situation and there comes a great need for new flush oil these prospects will not be hurriedly drilled. Even every old producing salt dome on the coast still is open for wildcatting, as there is not a dome but on which there remains some undeveloped sector. The development of production underlying possible salt overhangs, such as is going on at Barbers Hill, is an additional potential wildcatting possibility.

The lower Gulf Coast district also remains an extensive potential source of oil. Scattered wildcatting over that territory during 1931 resulted in the uncovering of what may prove to be important fields and has stimulated interest throughout the counties making up the area. The most important development on the horizon at this time is spread over southern Victoria County and northern Refugio County, where the existence of an extensive field already has been proved. This is what is known as the McFaddin district, which has been proved for gas since the middle of 1930 and where two oil producers have been completed since early in December. This particular district, however, is made up of large ranch ownerships and development is in the hands of not more than a half dozen larger companies. Thus, while important wildcatting will be done in order to link the already scattered productive spots, this will be done by consistent development as on the salt domes and prospects in the main Gulf Coast district.

In Eastern Texas

There is little wildcatting expected to be done in East Texas and East Central Texas during the first six months, except by the tests which have already been started, and on locations previously staked, and derricks erected. Probably some of those locations will be abandoned before the test is spudded in, as some were abandoned in the past. As the East Texas Field continues to be held in curtailment, more wells are completed every week, pressures decline to the point where many wells are put on pump, there will be more incentive to drill wildcat tests in the two districts, but until that time, the vast East Texas Field will dominate to the extent that it will retard all other progress, as it has during 1931.

Many Tests Expected

The year 1932 gives promise of a considerable revival in wildcatting in all of the Rocky Mountain states and should business conditions in general and the oil industry in particular take a pronounced upward turn, exploration for oil and gas may be expected to exceed the development in any year for the past five years. Especially will this be true if the small independent wildcatter finds conditions more favorable for financing his projects. In any event, the major companies probably will do more exploration work than in 1931.

In Wyoming, where a few years ago it was believed that all the most likely structures had been tested, there has been a gradual change in this opinion. This has been due in part to improved drilling methods which permit the testing of structures formerly considered too deep, and to more modern methods of working out the domes by surface geology and coredrilling and the use of geophysical instruments. Also, a number of important discoveries in lower horizons in producing fields in recent years has made deeper drilling more attractive.

During the past year the various methods of working out the geology have been employed on the Overland Dome, 8 miles southeast of Walcott, in Carbon County, by the Producers & Refiners Corp.; on the Shawnee structure, in Converse County between Douglas and the Lance Creek Field, by the Phillips Petroleum Co.; around Lingle, in Goshen County, by the Phillips Petroleum Co.; to the southwest of Cheyenne, by the Prairie Oil & Gas Co., and in several other districts. Upon the completion of this work, some of which still is in progress, several tests probably will be drilled. The Resolute Oil Co. has plans for drilling several deep tests with rotary equipment on the Badger Basin Dome in Park County, where it made a discovery below 8,700 feet the past year, and it is probable that the Midwest Refining Co. will drill a deep test with rotary equipment several miles south of the LaBarge Field in Sublet County. The Midwest Refining Co. will continue its exploration of the Geary Dome in Natrona County, between the Salt Creek and Big Muddy Field, and S. H. Keoughan and associates are working out plans for a test of the North Geary and another well on the Midway Dome in Natrona County, south of Salt Creek. The Prairie Oil & Gas Co. will complete in the spring a test it has been drilling on the Bunker Hill structure north of the Wertz Dome in Carbon County, and if this well comes in as a producer, as now appears probable, there will be a renewal of interest and more drilling in that territory. The improved position of the black oils is expected to result in several of the well-known structures in the Big Horn Basin, which have never been tested to the Embar, Tensleep and Madison horizons, to be drilled.

Most of the above mentioned plays will call for deep drilling, but the company with limited means also will have a play in the northeastern part of the State. The Osage Field in Weston County, has been extended several times toward the west in the past two years and at around 2,000 feet some good wells in better sand formations have been completed. Further exploration of the territory to the west as far as Fidler Creek and into Campbell County is on the program.

Northeastern Colorado

In Colorado, the principal play will be in the northeastern part of the State, principally in Weld and Morgan Counties, but extending down into Washington County. More than 1,000,000 acres are under lease, much of which is held by major companies, and while most of this land is held under commercial leases that do not call for drilling, the operators are anxious to find out more about the country. An area that looks particularly promising where the major companies have blocked up a large acreage is in Weld County, to the northeast of the Greasewood Pool in what is known as the New Raymer-Buckingham district. To the south, in Morgan County, the Fort Morgan Oil Co. has a large block to the east and northeast of Weldona where at least one test is planned and between this block and the town of Fort Morgan the Colorado Associated Oil Co. plans to drill another well on the North Fort Morgan Dome. To the southeast of Fort Morgan, the Indian Territory Illuminating Oil Co. has several untested blocks and, while no announcement has been made to that effect, it has been reported that another test is to be drilled by that company. The Prairie Oil & Gas Co. has a block in Washington County west of Akron and W. H. Kistler & Co. have an option on the Middlemist structure where a well has been drilled to 1,400 feet. When the budgets of the major companies for 1932 are made up, it is expected that provisions will be made for several tests in the areas mentioned.

There will be some drilling to the north, east and southeast of the Greasewood Pool in Weld County. The Continental Oil Co. is expected to put down at least one well and the Ohio Oil Co. has two in contemplation, while the Reiter-Foster Oil Co. has drilling options on several locations.

Another Colorado play will be in Larimer County between Loveland and Berthoud and to the west of the last-named town. This has been brought about by the discoveries in the Berthoud Field which point to possibilities in other areas in that district. At the end of 1931, this district was showing more actual wildcatting under way than any other, mostly by local and independent companies. The Ohio Oil Co. will drill the Craig Dome, 3 miles south of Craig, in Moffat County, for gas, and the same company may start a test on the Meeker Dome near the town of that name in Rio Blanco County. The California Co. is expected to complete a deep rotary test on the Rangely Dome, and the Magnolia Petroleum Co. is making a test of the Piceance Creek Dome, both in the same county.

Work in Montana

In Montana, there are several areas which will receive attention. L. B. O'Neil is reported to have plans for 20 wells in

(Continued on Page 122)

AMERADA PETROLEUM CORPORATION

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Tulsa, - Oklahoma

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EIGHT NEW POOLS ON GULF COAST IN 1931

(Continued from Page 76)

phur water and was abandoned. Previously, this test, while drilling around 835 feet, had a gas blowout but this was successfully killed. The first test on the dome, located 200 feet distant, also had had a blowout in a sand at 244 feet. However, the hole was lost and the test abandoned. Since the abandonment of the second test further development has been suspended.

At Gueydan, Vermillion Parish, Pure Oil Co.'s No. 1 Alliance Trust Co. drilled into salt and proved the geophysical findings there. Cap rock was topped at 6,028 feet and salt at 6,404 feet. The hole was drilled to 6,458 feet and abandoned. This was one of three deep tests which have been drilled on the dome. A fourth is drilling. No production has been found. Most of the dome is held by Pure Oil Co. although Humble and Gulf and others have some acreage.

Drilling Records Broken

Deep drilling records on the Coast again were broken during the year when the Union Sulphur Co. drilled its No. 762 fee at Sulphur, Calcasieu Parish, to a total depth of 9,250 feet. From 5,864 feet on down was salt, the greatest amount of salt ever drilled into. However, the salt was not drilled through as has been done at Barbers Hill. The test was started in an effort to go through the salt and prove an overhang there but when 9,250 feet was reached operators decided to plug back to sand at 5,064-72 feet, where the well was completed for 1,400 bbls. daily.

Indications of a possible new gas field were given by Louisiana Gas & Fuel Co.'s (United Gas) No. 2 Minor, Section 3-18s-16e, Terrebonne Parish, Louisiana. This test encountered a gas sand at 3,878-82 feet but on a test showed water and the hole now is drilling deeper. This is located on a geophysical salt dome prospect which is one of the discoveries of 1931. It is about 15 miles northwest of the old Houma gas field and about 7 miles southwest of the town of Houma. The first test a mile distant, was abandoned as dry at 6,504 feet.

Although no more new prospecting and development was undertaken than necessary, a number of interesting deep wildcats were drilled during the year. Among the more prominent prospects, not previously mentioned, drilled for the first time were Vidor, Orange County; one test by Gulf Production Co.; Cheek, Jefferson County, one test by Humble Oil & Refining Co.; McFaddin Ranch, Jefferson County, one test by Humble Oil & Refining Co.; Magnolia, Montgomery County, one test by Humble Oil & Refining Co., Fresno, Brazoria County, one test by The Texas Company; Citrus Grove, Matagorda County, one test by Empire Gas & Fuel Co. and one by Harvey Smith; one in Section 66-11s-6e, St. Martin Parish, one test by Harrison & Abercrombie; one in Thomas Alsbury Survey No. 4, 3 miles east of Nash Dome, one test by Harrison & Abercrombie. On two of these, Citrus Grove and Fresno, first tests were started in 1930 but not completed until in 1931. Additional prominent prospects were drilled but previous tests had been completed before 1931.

Production Record

The decrease in the production on the Gulf Coast was entirely in the Texas division, there being an actual increase in the Louisiana coastal fields of 1,181,762 bbls. Louisiana has not been under any proration restrictions but the increase there is not due to any desire on the part of operators to take advantage of that. On the other hand, operators in Louisiana have sought to restrain development as much as on the Texas coast. The Texas coastal fields also were not under any definite proration restrictions except that the State Railroad Commission set a maximum allowable for the entire district and it was left to operators in the individual fields to reduce production to within the amount set. The reduction was effected chiefly by voluntary restricted drilling, confining all new tests to "outside" and obligated locations.

MANY LONG OIL PIPE LINES ARE LAID IN 1931

(Continued from Page 97)

Thorndale, near Downeytown, Pa.; Fredericksburg, near Lebanon, Pa.; Mazeppo, near Milton, Pa.; Woolrich, near Lockhaven, Pa.; First Fork, near Austin, Pa. Since the increase in capacity, both the Franklin and Pittsburgh refineries of the Atlantic Refining Co. have stopped using Mid-Continent crude formerly received via overland pipe lines and are supplied entirely, with the exception of the regular amounts of Pennsylvania grade crudes, from Marcus Hook.

Gulf Coast Lines

A number of smaller pipe lines were laid on the Gulf Coast during 1931. Two of these provided first outlets for fields which are listed among the older fields of the coast. The largest of the projects was the laying of a 10-inch line by Yount Lee Oil Co. from High Island to the company's tank farm and terminal at Beaumont, a distance of approximately 45 miles. Previous production at High Island, which has never been more than a few hundred barrels daily except for brief periods, has been moved by tank car, being bought by the Gulf Pipe Line Co. When Yount Lee Oil Co. acquired control of the field by purchase of the properties of the Gulf Production Co. and Marrs McLean, who formerly owned virtually all the dome, work of laying a pipe line outlet was started.

Another old field given first pipe line outlet during the year was Markham in Matagorda County. The line, laid by the Texas Pipe Line Co., consists of 4-inch pipe and runs to West Columbia, a little over 20 miles distant, where it ties into the company's West Columbia line. Markham has been productive since 1907, but no important oil has been found there until the past year when a deep flank sand was discovered on the northeast side. The Texas Pipe Line Co. has been a buyer of Markham crude, although The Texas Company has no oil of its own there but has moved the oil out from the loading rack at Bay City, from where a small short line runs to the field.

Gulf Pipe Line Co. laid a 6-inch line to the Rabbs Ridge (Clear Lake or Thompson) Field, eastern Fort Bend County. This, however, necessitated only approximately 5 miles of pipe, a branch from the company's Orchard-Pierce Junction line. Rabbs Ridge is a new field, opened last May, and is owned jointly by Cullen & West and Gulf Production Co.

The Texas Pipe Line Co. added another pipe line outlet to Barbers Hill, Chambers County, by the completion of a 6-inch line from the field to Dayton, Tex., where it ties in with the company's trunk system to Port Arthur. The line is 20 miles long.

This company also laid 32 miles of 8-inch pipe from Houston to the Republic Oil Refining Co.'s new plant at Texas City. The line connects with two trunk lines, one from West Texas and from North Texas. The Houston-Texas City line was laid in conjunction with a line from Iraan to Texon in West Texas. The latter, which is 26 miles of 6-inch pipe, furnishes outlet for the Reagan County crude of the Big Lake Oil Co., which is being bought by the Republic Oil Refining Co. at Texas City and run through the Texas Pipe Line Co.'s system.

NEW LOW PRICES IN PRODUCTS OF REFINERIES

(Continued from Page 52)

33.68 cents in 1929. Steam refined stocks and special stocks experienced similar declines. The decline in neutral oils was not so pronounced. The 200-3 zero to 10 cold test averaged 9.21 cents in 1931 and 10.59 cents in 1930. A 200-3 pale neutral at the Gulf Coast averaged 7.75 cents in 1931 and 9.12 cents in 1930.

Although the statistical situation of paraffin wax improved, prices continued to decline in 1931 and new low averages were established. At Bayonne, the 120-122 grade brought an average price of 2.93 cents per pound in 1931. The same grade averaged 3.26 cents in 1930 and 4.24 cents in 1929.

NO LARGE DEVELOPMENT IN THE LA.-ARK. AREA

(Continued from Page 87)

MISSISSIPPI

Completions by Counties

	Comp.	Prod.	Dry	Gas*
Adams	1	0	1	0
Chickasaw	1	0	1	0
Clarke	1	0	1	0
Clay	1	0	1	0
Covington	2	0	2	0
Grenada	2	0	2	0
Hinds	26	0	8	18
Humphrey	2	0	2	0
Jefferson	1	0	1	0
Madison	1	0	1	0
Monroe	3	0	1	2
Neshoba	1	0	1	0
Smith	1	0	1	0
Rankin	25	0	9	16
Warren	5	0	5	0
Winston	1	0	1	0
Webster	1	0	1	0
Yalobusha	*1	0	1	0
Total 1931	76	0	40	36
Total 1930	60	100	28	31
Difference	16	100	12	5

*Gas production—Hinds, 395,774,000 feet; Monroe, 2,500,000; Rankin, 549,636,000; total, 947,910,000 feet.

Completions by Months

	Comp.	Prod.	Dry	Gas
January	13	0	7	6
February	8	0	5	3
March	2	0	2	0
April	11	0	7	4
May	7	0	6	1
June	1	0	0	1
July	5	0	2	3
August	5	0	3	2
September	1	0	0	1
October	8	0	3	5
November	9	0	4	5
December	6	0	1	5
Total	76	0	40	36

EAST TEXAS GAS FIELD

Completions by Counties

	Comp.	Prod.	Dry	Gas*
Bowie	3	0	3	0
Cass	7	0	7	0
Harrison	17	0	17	0
Marion	8	0	8	0
Panola	15	0	9	6
Sabine	1	0	1	0
Shelby	7	0	7	0
Total 1931	58	0	52	6
Total 1930	37	0	8	29
Difference	21	0	44	23

*Gas production—Panola County, 89,942,000 feet.

Completions by Months

	Comp.	Prod.	Dry	Gas
January	7	0	5	2
February	2	0	1	1
March	2	0	2	0
April	12	0	11	1
May	3	0	3	0
June	5	0	5	0
July	6	0	5	1
August	4	0	4	0
September	3	0	3	0
October	8	0	8	0
November	4	0	4	0
December	2	0	1	1
Total	58	0	52	6

The Oil and Gas Journal's Table Showing Low Average Prices for 1931, 1930 and 1929 on Representative Refinery Products (f.o.b. Plants and Terminals) for Domestic and Export Movement. Table Also Gives Low Average Prices for First Six Months and Second Six Months and the Yearly Highs and Lows

(Continued from Page 53)

	1931					1930					1929				
GASOLINE AND NAPHTHA— Oklahoma (Group 3):	Av. pr. for yr.	High	Low	Av. price 1st 6 mos.	Av. price 2nd 6 mos.	Av. pr. for yr.	High	Low	Av. price 1st 6 mos.	Av. price 2nd 6 mos.	Av. pr. for yr.	High	Low	Av. price 1st 6 mos.	Av. price 2nd 6 mos.
N. Y. (BAYONNE) REFINERY PRICES—															
Gasoline, U. S. Motor, 58-60, 437 e.p.	.0604	.07	.05⅛	.0644	.0564	.0807	.09	.06¼	.0864	.0755	.0940	.10½	.08¾	.096	.0920
Kerosene, water white, 41-43	.0545	.06¼	.04¾	.0576	.0513	.07	.07¾	.06	.0742	.0662	.0806	.09	.07¾	.0832	.0781
Fuel Oil, Bunker "C," 14-16*	.8346	1.05	.60	.9923	.6769	1.0919	1.15	1.05	1.094	1.09	1.05	1.05	1.05	1.05	1.05
Fuel Oil, Diesel, 28-30, per bbl.†	1.5673	1.85	1.30	1.7538	1.3808	1.9913	2.00	1.85	2.00	1.98	2.00	2.00	2.00	2.00	2.00
Gas Oil, 28 plus gravity	.0407	.04¼	.03¾	.0417	.0397	.0472	.04¾	.04¼	.0475	.0469	.0516	.05¼	.04¾	.0512	.0519
Refined Wax: 120-122 a.m.p., per lb.	.0293	.03	.02¾	.0297	.0288	.0326	.03⅞	.02¾	.0358	.0296	.0424	.05⅝	.03⅞	.0468	.0381
Petrolatum (bbls.), carload lots, lb.: Amber	.0281	.03¼	.02½	.0304	.0258	.0291	.03⅝	.03¼	.0336	.0325	.0353	.03⅝	.03½	.035	.0355
*Lighterage, 5 cents a barrel extra. †Lighterage 6.5 cents per barrel.															
N. Y. (BAYONNE) EXPORT PRICES—															
600, steam refined Cylinder Stocks, in bbls.	.1783	.22	.15½	.1624	.1925	.236	.31½	.16½	.303	.1746	.3347	.43	.30	.3502	.32
600, Pennsylvania flash	.2229	.26½	.19½	.2098	.2360	.3267	.40	.23½	.39	.2681	....	....	....	....	....
Light 140-150 Bright Stocks	.2803	.35½	.24¼	.2535	.3071	.3935	.52	.26	.4812	.30	.5612	.63	.46	.534	.59
LOS ANGELES EXPORT PRICES—															
Kerosene, water white	.0386	.04¾	.03½	.0448	.0309	.0417	.04¾	.03¾	.0407	.0427	.0508	.05½	.04½	.055	.047
U. S. Motor Gasoline, 53-55, 437 e.p.*	.0438	.07	.03¼	.0451	.0425	.0633	.06¾	.04¾	.0634	.0631	.0693	.08	.06¼	.0718	.0668

*For coastwise and off-shore shipments.

New York Exports Sharply Lower

Heavy Declines Registered in Foreign Shipments of Major Products. Russian and Rumanian Competition Furnished Stiff Opposition

By A. E. Mockler

Refiners and export operators shipping out of the port of New York experienced a further sharp contraction in export sales during 1931, foreign sales totals of all of the major products registering sizable declines from comparable figures for the previous year. The falling off in export business is not due solely to unfavorable economic conditions in consuming countries, but is due more largely to intensified competition of Russian and Rumanian refined products in world markets, as well as the growing refinery operations abroad, by means of which many countries formerly dependent upon the United States for a large part of their refined petroleum requirements are now taking care of an increasing percentage of their needs through home refining. These trends, unfortunately, show no signs of abating; on the contrary, the outlook is for further contraction in export volume.

An interesting summary of the export situation in New York during the past year is shown in the following percentage tabulation contrasting 1931 export volume with that for the previous year:

Product—	Percentage change
Gasoline	—39
Naphtha	—58
Kerosene	—62
Fuel oil	+10
Lubricating oil	—16
Petroleum, refined	—32
Petrolatum	+29
Lubricating grease	—14
Paraffin wax	+14
Crude scale	—23
Refined	—14

Detailed data on exports, by quarters, with comparison with 1930 and 1929 export totals, are given in the accompanying tabulation.

Operators Lose

There has been a pronounced falling off in export business falling to New York operators during the past year, and as foreign markets for American oil narrow the percentage of business handled by the large integrated companies with foreign marketing subsidiaries and affiliates is steadily increasing. This situation has been anticipated by most of the major companies and the extensive expansion in foreign marketing operations undertaken by some of the larger integrated companies during recent years was based largely upon the anticipated changes in the export situation which have now become realities.

While independent export operators still have a place in the market, and will undoubtedly continue as factors in the export situation, their importance has dwindled considerably and the independents no longer "make the market" as has been the case in some previous years.

Cased Products Competition

Gasoline, kerosene, and naphtha shipments into export channels through New York are now running largely to cased products, with bulk shipments made largely out of the Gulf, and the falling off in export totals in New York reflects a dwindling foreign demand for American cased refined petroleum products. This does not necessarily indicate equal declines in actual foreign consumption, however, as modernization of marketing facilities in many foreign countries has now reached the point where markets formerly handling cased products almost exclusively are now equipped to handle bulk shipments.

Russia has come to the fore as a competitor in sales of cased refined petroleum in foreign fields during 1931, and it is expected competition from this source will continue to grow as the broadening of producing and refining operations in Russia reaches the point where the Soviet naphtha syndicate has the time and the facilities for reaching more aggressively into the specialties field.

The export association continued dormant during the entire year, although the fact that member-companies have kept the corporate existence of this co-operative body in existence indicates the possibility that leading interests plan to revive the operations of that group when world market conditions become more propitious. The failure of the export association to accomplish the aims of its sponsors was due in large measure to the unprecedentedly abnormal conditions which prevailed in world petroleum markets during its short existence, and leading interests in the industry have by no means abandoned the idea that the export association may yet develop as the stabilizing influence needed to regulate export markets for American refined products.

Outlook for 1932

While world consumption of gasoline and lubricating oils may be expected to increase somewhat, notwithstanding continued unsettled economic conditions, it is not believed American refiners will get as large a share of this new business as in former years.

EXPORTS OF REFINED PETROLEUM PRODUCTS FROM NEW YORK

	1931	1930	1929
	Gallons		
Gasoline	10,299,000	16,781,000	22,915,150
Naphtha	15,119,000	36,797,000	55,473,800
Kerosene	4,872,000	10,184,000	15,356,200
Fuel oil	6,940,000	5,386,000	6,618,600
Lub oil	79,836,000	95,999,000	92,392,500
Petroleum, refined	42,873,000	61,450,000	79,526,800
	Pounds		
Petrolatum	2,265,000	1,748,000	1,127,600
Lubricating grease	42,999,000	50,246,000	59,042,600
Paraffin wax	87,293,000	76,324,000	81,509,600
Scale	21,675,000	28,263,000	22,453,500
Refined	10,099,000	11,844,000	4,832,800

Great Britain, one of the important consumers of American refined products, is showing indications of "going native" on gasoline, as on other products. There is considerable agitation in British oil trade circles for an import duty on gasoline and other products, with preference to be given imports from British dependencies, the move being designed both to aid the colonies and to help the home unemployment situation through greater operation of British refineries, which during 1931 operated at but approximately 33⅓ per cent of rated capacity.

Germany, another large consumer of refined products produced in the United States, has considerably modernized and enlarged its home refining industry, with further construction scheduled for the current year. With production of German crude steadily increasing, that country is expected to diminish its purchases in the American market as domestic production increases.

The refinery construction program in

(Continued on Page 113)

California Shipped Less Gasoline East

Major Units Curtailed Intercoastal Movement to Stabilize Markets. Priced on Parity With Eastern Motor Fuel

By A. E. Mockler

California definitely relinquished her position as a major factor in East Coast gasoline markets during 1931, with a sharp drop in intercoastal shipments recorded. Total receipts of California gasoline at Atlantic and Gulf Coast ports (almost entirely the former) for the past year were 14,535,000 bbls., a material decline from the 19,789,000 bbls. received in 1930, and the 1929 receipts of 21,347,000 bbls.

Intercoastal movement of California gasoline is now almost exclusively centered in the hands of the large integrated companies, including Standard Oil Co. of New York, Standard Oil Co. (New Jersey), Richfield Oil Co. of California, Atlantic Refining Co., and Sun Oil Co. With open market activity in the California intercoastal trade virtually extinct, the major factors have been able to regulate the movement to the actual needs of East Coast markets, and the Pacific Coast motor fuel has been absorbed into the East with no pronounced disturbance to established price levels.

The California products, which in former years had commanded premiums variously ranging from a quarter to 1 cent per gallon over eastern-made gasolines, sold through the greater part of 1931 on a parity with local refinery prices, and the Pacific Coast, so far as the eastern trade is concerned, is now definitely out of the premium class.

California gasoline continues largely used by eastern refiners and marketers in their featured brands, the natural antiknock qualities of some grades of California gasoline lending themselves admirably to the present-day demand for motor fuels high in antiknock value.

The drop in California shipments eastward during the past year, particularly during the closing half of 1931, was due in no small measure to changes in the Richfield Oil Co. of California, now operated by a receiver. In August, 1931, the Richfield stopped making shipments to the Richfield of New York. The eastern company is now getting its gasoline from the Louisiana Oil Refining Corp., a Cities Service subsidiary.

Considerable interest is manifest in eastern trade circles over the pending merger of Standard Oil Co. (New Jersey) and Standard Oil Co. of California. It is expected that one result of this consolidation will be an increased eastward movement of California gasoline, for distribution through the eastern marketing divisions of the New Jersey company and its subsidiaries.

Low Prices

Uniformly low prices for motor fuel in the refinery market in East Coast territory throughout 1931 undoubtedly exercised a pronounced effect upon the eastern market for California gasoline. Numbers of distressed tankers were available at record low rates during the greater part of the year, and under more normal market conditions considerable quantities of Pacific Coast motor fuel would have been brought eastward for distribution here.

Low prices at eastern refinery terminals, however, coupled with the frequently-shown willingness of major eastern marketers to meet price competition wherever and whenever it developed, tended to dampen the trading ardor or interests which formerly brought California gasoline eastward.

While California refiners, in keeping with the remainder of the domestic refining industry, restricted operations during 1931 and endeavored to reduce surplus gasoline holdings, stocks on the Pacific Coast still remain topheavy, and these surplus holdings constitute a continued menace to the stability of Atlantic and Gulf Coast markets. The preponderance of California gasoline stocks is shown in the following table of gasoline holdings at principal refining areas at the close of 1931:

(Barrels of 42 Gallons)

East Coast	4,861,000
Appalachian	1,331,000
Indiana, Illinois, Kentucky	4,636,000
Oklahoma, Kansas, Missouri	3,262,000
Texas	8,193,000
Louisiana-Arkansas	1,428,000
Rocky Mountain	1,767,000
California	13,578,000

Overproduction of crude in East Texas, coupled with the record low prices at which considerable of the flush output was sold, definitely "killed off" California gasoline as a factor in Gulf Coast markets, although a few cargoes were moved into Gulf ports by large integrated companies, which, according to reports, used the Pacific Coast product for blending.

Not only did the overproduction of East Texas crude keep California gasoline out of the Gulf Coast area in 1931, but the rapid growth of refining facilities adjacent to the East Texas fields made available to East Coast markets a new supply of cheap, high-grade, gasoline which definitely affected eastern demand for the California product.

California refiners not only lost considerable gallonage in Atlantic Coast territory during 1931, but Pacific Coast sellers also lost in prestige as factors in the export market. During 1930 and the early part of 1931, California refiners for the first time loomed as important competitors with the Gulf Coast market in export sales. Notwithstanding the increased transportation costs on California gasoline shipments to Europe, as contrasted with tanker movement out of the Gulf, California refiners were meeting (and sometimes beating) the quotations of Gulf Coast sellers on export business, and the withdrawal of the export association in 1930 created a serious situation, meaning as it did the discontinuance of the differential previously maintained between Gulf Coast and California gasoline quotations. Just as Rumanian dumping ruined export markets for Gulf Coast sellers, however, likewise the same reactions were experienced by California sellers who had been competing with Gulf Coast operators, and the bringing in of the East Texas pools, with the resultant flow of extremely low priced gasoline to Gulf Coast export terminals, completed the rout.

While California gasoline stocks at the start of the current year comprised 33⅓ per cent of the indicated holdings of domestic refiners, the surplus stock condition in California thus indicated is somewhat exaggerated through the fact that in the compilation of these figures, in all the refining districts indicated except California, figures given represent gasoline stocks at refineries, whereas in Cali-

(Continued on Page 114)

Atlantic Coast Prices Lower in 1931

Bunker C and Diesel Oil at All-Time Lows. Gallonage Good but Market Reflected Cheap Crude and Competition

By A. E. Mockler

Although gallonage ran into satisfactory totals in most branches of the East Coast refined products market during 1931, the year was a sorry one from the standpoint of netback to the refiners. Refined products markets reflected to the full both low crude oil prices and continued heavy competition in refined products sales.

Fuel oil and Diesel oil in particular came in for heavy competition during 1931, resulting in price declines which carried the market to the lowest levels in the recorded history of the oil industry at 60 cents per barrel for bunker "C" and $1.30 per barrel for Diesel oil at refinery terminals. The sharp decline in these two heavy oils, however, was not solely the result of domestic competitive conditions, but was due in large measure to competition in European markets. Rumania entered the European markets as a large-scale seller of both of these oils during 1931 and this new competition, coupled with the selling of Russian oils on a competitive price basis, forced East Coast refiners to lower their quotations in order to hold their marine business.

The trend toward intensification of integration was still evident during 1931, perhaps the outstanding features in this direction being the steps taken by leading interests to further bring their distributing operations under direct control. This took the form of gasoline pipe line construction in some cases, the most important development along this line being completion of Sun Oil Co.'s gasoline line from its Philadelphia refinery to interior markets in Pennsylvania and New York State, and thus on to the New York State barge canal and to the Great Lakes, opening up an important new marketing territory to Sun. Atlantic Refining also came to the fore in this respect during the year, with the start of the building of an extensive gasoline pipe line distributing system, the first divisions of which were placed in operation in Pennsylvania late in December. Standard Oil Co. of New York also entered the pipe line field for the transportation of gasoline with a projected line from tidewater to interior New England points. Reports of further pending gasoline pipe line construction plans for East Coast territory have been heard, but additional projects of this type, it is believed, will be held back until economic conditions show a more decided change for the better.

Gasoline distribution under direct control of the refiners was also achieved during the year by the addition of many new shallow draft tankers for river distribution at various points in the East, and further developments along this line are anticipated during 1932.

Mergers

The most important development of the year, from a marketing standpoint, was the consummation of the consolidation of Standard Oil Co. of New York and Vacuum Oil Co., which established a new and powerful combination with marketing ramifications throughout the East.

Acquisition of control of Richfield Oil Corp. of New York by Cities Service interests, and the rumored control of Warner-Quinlan by the same interests was also a major move of 1931.

Further extension of New York and New England marketing operations by Standard Oil Co. of New Jersey, through the expansion of the retail marketing system of Colonial-Beacon Oil Co., a subsidiary, also attracted considerable interest during the year, while the pending Sinclair-Prairie and Standard Oil Co. (New Jersey) and Standard Oil Co. of California are also expected to have their effect upon East Coast markets.

Sun Oil Co. was responsible for a revolutionary change in marketing operations during 1931 when it first gave prominence in its consumer advertising to high octane numbers as a criterion for high-grade motor fuel. The developments of the Sun refining plant along this line had apparently caught the remainder of the industry asleep, although other major interests have been quick to follow.

The "octane battle," as it is referred to in some quarters of the industry, promises to be a major factor in 1932 operations, and will undoubtedly be instrumental in considerable new plant construction on the part of refinery units which are unable with present equipment to produce gasoline of high octane number.

The retail craze for high octane gasoline has naturally brought about a similar repercussion in the refinery market, and toward the latter part of the year there was a decided cleavage in quotations for U. S. Motor gasoline in tank car lots, with a differential of from one-half to 1 cent per gallon in favor of gasolines testing 65 octane number or better. Large interests have been loath to draw the dividing line in their wholesale marketing operations, but they are being forced to this step notwithstanding, and 65 octane number appears to be firmly established as the dividing line between ordinary and "super" motor fuels.

Outside Gasolines

There was a substantial falling off in shipments of so-called "outside" gasolines into East Coast territory during 1931, due largely to the voluntary restriction in shipments on the part of major interests with refining facilities in the vicinity of the flush Venezuela fields.

Movement of California gasoline to East Coast ports also fell off somewhat during the year, due both to unfavorable wholesale markets in the East and better control over the situation. During the latter part of the year, California shipments were largely for the account of eastern marketers blending the California product with their own output, or marketing it, after the indispensable and seemingly necessary "coloring," as a featured product.

There was some increase in shipments of gasoline from Gulf Coast ports to the Atlantic Seaboard, following the phenomenal development of East Texas fields and the resultant springing up of a refining industry in that area. Working on ridiculously low-priced crude, and not burdened with carry-over inventories of higher priced products, East Texas refiners were able to lay down high quality gasoline at New York, Baltimore, Philadelphia, Boston and other East Coast ports at extremely low prices, and for a time did a flourishing business. One East Texas refiner, Republic Oil & Refining, is now definitely established as an important factor in East Coast markets.

Retail Markets

Abnormal refinery gasoline markets naturally did not make for stability in retail channels and the situation at several times during the year showed signs of getting entirely out of hand.

Local price cutting was a factor throughout the year, particularly during the latter six months of the period, and major marketers were forced to the old expedient of "meeting local competition."

Major marketers took a firm hold on the situation in the closing quarter of 1931, however, and drastic slashes in posted prices at points in the territory where price cutting had become general resulted in the restoration of a fair degree of stability to retail markets.

Gasoline bootlegging attained the proportions of a major trade evil in many points in eastern territory during 1931, and with higher gasoline taxes scheduled for some points in the territory this year, large oil companies are fearful of further racketeering in gasoline sales. Detection and prosecution of tax law violators has been far from energetic in most instances and the situation has now reached the point where the major marketers find it essential to arouse public opinion to protect their own interests.

Although working against heavy odds, the various regional code committees in East Coast territory made some progress in stabilizing retail markets through code work last year, and further progress in that direction is anticipated during the year just getting under way.

REFINERY GASOLINE
(U. S. Motor)

	Cents High	Cents Low
1931	7	5¼
1930	9	6¼
1929	11	8⅝
1928	11¾	8¼

Posted quotations for U. S. Motor gasoline in tank car lots at refinery terminals in 1931 were again consistently under comparable levels for the several years preceding. Although East Coast refiners made some progress in reducing gasoline inventories through curtailed refinery runs and a large quantity of gasoline refined on the Atlantic Seaboard during the year was made from exceptionally cheap crude, strong selling competition held prices down and cut sharply into average netback.

During the closing quarter of the year, under the stimulus of continued heavy consumption, lessened production and curtailed shipments from California and South America, the tank car market showed some stiffening, but the higher price basis established barely lasted out the year before renewed price cutting undermined the market position.

The outlook for the first quarter of 1931 remains uncertain, but leading interests hold decidedly constructive views as to the probable market trend during the balance of the year.

REFINERY KEROSENE

	Cents High	Cents Low
1931	6	4¾
1930	7¾	6
1929	9	7¾
1928	9	7½

As was the case with motor fuel, refinery kerosene markets exhibited considerable irregularity during the past year, but it was significant that in a generally weak market kerosene closed the year at its price level for 1931 and enters 1932 in strong position.

Kerosene consumption showed material gains during the closing quarter of the year, and it was indicated that well-sustained consumption was in sight for the first quarter of 1932 and probably well into the spring season. Refiners continue to produce burning oil on a restricted basis and every effort is being made to further reduce surplus holdings.

An interesting development in kerosene marketing during 1931 was a widespread campaign for kerosene sales through directly owned and controlled gasoline filling stations.

DIESEL OIL

	High	Low
1931	$1.85	$1.30
1930	2.00	1.85
1929	2.00	2.00
1928	2.10	2.00

For the first time in many years, Diesel oil was drawn closely into the maelstrom of competition during the past year, and the market registered a sharp decline, closing the year at $1.30 per barrel, 55 cents under the posted price at the beginning of 1931 and the lowest price in the history of the East Coast oil trade.

Rumanian competition in European ports was largely instrumental in forcing the sharp cuts on Diesel oil, East Coast refiners finding it necessary to meet these low European prices to protect their bunkering business.

With world curtailment of crude output looked for in 1932, refiners are optimistic regarding some price recovery in Diesel oil markets during the current year.

The feature of last year's Diesel oil market, aside from the price debacle, was the constructive development seen in the steadily increasing domestic industrial consumption of that oil.

BUNKER "C" OIL

	High	Low
1931	$1.05	$0.60
1930	1.15	1.05
1929	1.05	1.05
1928	1.35	1.05

The price trend in bunker "C" oil during 1931, as was the case with its companion bunker oil, Diesel, was dictated largely by foreign developments, and closing the year at 60 cents, the fuel oil market was at the lowest price in the history of the industry.

Topheavy domestic stocks of fuel oil contributed to the weakening in the market, while falling domestic consumption, as well as some drop in marine requirements for bunkering purposes, likewise left their imprint on the market.

The outlook for fuel oil in the current year is brighter, however, and some interests in the East are inclined to believe that the market will be at a higher level by the close of the first quarter, this opinion being based on the belief that further constructive developments in the crude production situation may be looked for. The possibility of a tariff impost on petroleum imports is also looked upon as a bullish factor affecting the heavy oils.

GAS OIL

	Cents High	Cents Low
1931	4¼	3½
1930	4⅝	4¼
1929	5¼	4⅝
1928	5¼	5¼

An interesting feature of the above comparative prices for 28 plus recycled gas oil is the fact that the low price for each year has carried over as the peak price for the following year, which speaks volumes as to the market position during the past four years.

Gas oil consumption by gas manufacturing companies in East Coast territory has been materially affected by the growing use of bunker "C" oil in gas manufacturing operations, and this trend promises to become more pronounced. The East Coast gas oil market was in uniformly weak position throughout the past year, and low prices ruled, with keen competition forcing cuts under posted levels at times.

On the constructive side of the market, sharp increases in the number of domestic oil burner installations in New York and New England territory were reported, indicating a potentially greater consumption of gas oil for domestic heating.

Red and Pale Oils

Consumption of these oils was affected by the general slackening in industrial operations during 1931, but the market was closely controlled, and refiners succeeded in maintaining their posted prices throughout the year.

Numerous improvements in quality have been a factor which has aided the market in holding its firm tone during the year, while the practical absence of destructive price cutting has likewise

(Continued on Page 114)

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Lack of an accessible and dependable fuel supply is a handicap to any community seeking industrial development.

In recent years Natural Gas has played an increasingly important part in attracting new enterprises and fresh capital to cities and towns which have this dependable fuel at hand in addition to other advantages, such as nearness to raw materials, available markets, adequate transportation facilities and availability of the required type of workers.

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Discovery of oil in East Texas found facilities of the United Gas System already available. Immediate expansion activities provided Natural Gas for extensive drilling operations throughout the productive area.

The United Gas System furnishes Natural Gas to homes and industries in more than a hundred Texas and Louisiana cities and towns. Member companies produce, transport and distribute this ideal fuel from the great Natural Gas fields of Texas, Louisiana and Mississippi.

Thus are three phases of the industry under unified control, assuring the area served an adequate, dependable supply of Natural Gas—sufficient to meet the requirements of the future as well as the needs of the present.

UNITED GAS SYSTEM

United Gas Public Service Company
Southern Gas & Fuel Company
United Production Corporation
Houston Gulf Gas Company
Houston Gas and Fuel Company
Southern Gas Company
Southern Gas Utilities, Inc.
South Texas Gas Company
South Texas Production Company
Texas Border Gas Company
Compania Mexicana de Gas, S. A.
Northern Texas Utilities Company

Crude Oil Price Changes for Year 1931

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL AND SOUTHWEST TEXAS

	Jan. 1	Jan. 14	Mar. 5*	Apr. 21†	June 1	July 8‡	July 24§	Aug. 22	Nov. 2
Below 29	.65	See	.43	...	.25	.10	.30	.46	.61
29 to 29.9	.69	note	.45	...	.26	.11	.31	.48	.63
30 to 30.9	.73	...	.47	...	.27	.12	.32	.50	.65
31 to 31.9	.77	...	.49	...	.28	.13	.33	.52	.67
32 to 32.9	.81	...	.51	...	.29	.14	.34	.54	.69
33 to 33.9	.85	...	.53	...	.30	.15	.35	.56	.71
34 to 34.9	.89	...	.55	...	.31	.16	.36	.58	.73
35 to 35.9	.92	...	.57	...	.32	.17	.37	.60	.75
36 to 36.9	.95	...	.59	...	.33	.18	.38	.62	.77
37 to 37.9	.98	...	.61	...	.34	.19	.39	.64	.79
38 to 38.9	1.01	...	.63	...	.35	.20	.40	.66	.81
39 to 39.9	1.04	...	.65	...	.36	.21	.41	.68	.83
40 and above	1.07	...	.67	...	.37	.22	.42	.70	.85

*Magnolia adopted same schedule March 5, except posts 26 gravity, 40 cents; 26-26.9, 41 cents; 27-27.9, 42 cents; 28-28.9, 43 cents. Sinclair met Stanolind schedule March 6; Carter, The Texas Company, Humble, Gypsy and Gulf on March 10.

†Humble on April 21 reduced Ranger, North Texas and Moran crudes 10 cents below Mid-Continent scale for corresponding gravities.

‡Posted July 8 by Humble, met by The Texas Company same date; by Gulf July 13, and Stanolind on July 9.

§July 23, The Texas Company, Humble, and on July 24, Gulf posted in North Central and East Central Texas oil below 36 gravity at 35 cents and 36 and above at 40 cents.

Posted by Stanolind Crude Oil Purchasing Co., The Texas Company and Sinclair Crude Oil Purchasing Co., includes Oklahoma, Kansas and North Texas. Magnolia Petroleum Co. includes Oklahoma, Kansas, North Texas, Panola County in East Texas, Lytton Springs and Somerset in Southwest Texas. Humble Oil & Refining Co. includes North Texas, Ranger, Mexia, Powell, Richland, Wortham, Currie, Moran, Nocona, Lytton Springs and Corsicana light. Postings by Carter Oil Co. and Gypsy Oil Co. include Oklahoma and Kansas.

Note—January 14, Humble posted separate prices for group of counties in North Texas around Wichita Falls including Wichita, Wilbarger, Archer and northern Young Counties. The prices follow: Below 29 gravity, 55 cents; 29-29.9 gravity, 57 cents with 2-cent differential per degree to 40 gravity and above at 79 cents. Met by The Texas Company and Magnolia June 15 and Stanolind on June 16.

ARKANSAS—NORTH LOUISIANA

Caddo, Bull Bayou, Cotton Valley, Sarepta-Carterville, Rainbow, Crichton, De Soto, Haynesville, Homer (La.), and El Dorado, Ark.—

Gravity—	Jan. 1	Nov. 10	June 2	July 11	July 24	Aug. 22	Nov. 4
Below 29	.65	.43	.25	.10	.30	.46	.61
29 to 29.9	.69	.49	.26	.11	.31	.48	.63
30 to 30.9	.73	.47	.27	.12	.32	.50	.65
31 to 31.9	.77	.49	.28	.13	.33	.52	.67
32 to 32.9	.81	.51	.29	.14	.34	.54	.69
33 to 33.9	.85	.53	.30	.15	.35	.56	.71
34 to 34.9	.89	.55	.31	.16	.36	.58	.73
35 to 35.9	.92	.57	.32	.17	.37	.60	.75
36 to 36.9	.95	.59	.33	.18	.38	.62	.77
37 to 37.9	.98	.61	.34	.19	.39	.64	.79
38 to 38.9	1.01	.63	.35	.20	.40	.66	.79
39 to 39.9	1.04	.65	.36	.21	.41	.68	.79
40 and above	1.07	.67	.37	.22	.42	.70	.79

Posted by Magnolia Petroleum Co., to include Pine Island in (Caddo), Haynesville, Bull Bayou and El Dorado. Standard Oil Co. of Louisiana; Gulf Refining Co., all fields; Atlantic Oil Producing Co., in Homer, Haynesville and West El Dorado; The Texas Company in Caddo, Bull Bayou and Crichton; Louisiana Oil Refining Corp., all fields.

Stephens—	Jan. 1	June 3	Aug. 24
Below 28.9	.54	.20	.41
29 to 29.9	.58	.20	.44
30 to 30.9	.62	.20	.44
31 to 31.9	.66	.20	.44
32 and above	.70	.20	.44

Posted by Atlantic Oil Refining Co. and Louisiana Oil Refining Corp.

Smackover—	Jan. 1	Mar. 10	June 2	June 3	July 11	July 24	Aug. 22†	Nov. 4
Below 24	.70	.45	.37	(*)	.15	.30	.45	.65
Above 24	.70	.45	.37	...	.15	.30	.45	.55

*On June 2 The Texas Company posted 37 cents met by Gulf on June 3. On June 3 Standard of Louisiana and Magnolia posted 25 cents. †The Texas Company 52 cents.

Posted by Standard Oil Co., The Texas Company, Gulf Refining Co., Atlantic Oil Producing Co., Louisiana Oil Refining Corp. and Magnolia Petroleum Co.

	Jan. 1	June 3	Aug. 22	Aug. 24	Nov. 2
Bellevue	1.00	.25	...	...	...
Urania	.75	.30	...	.40	.50
East El Dorado	.70	.25	.45	.45	...

Cotton Valley—Posted by Standard Oil Co. of Louisiana, Magnolia Petroleum Co. and Louisiana Oil Refining Corp.

Bellevue—Posted by Standard Oil Co. of Louisiana, Gulf Refining Co. and Louisiana Oil Refining Corp. Discontinued posting on July 11.

Calion (East El Dorado)—Posted by Gulf Refining Co.

TEXAS PANHANDLE

Gray County—	Jan. 1	Jan. 14	Mar. 10	Apr. 21	June 3	July 11	July 23	Aug. 22	Nov. 2
Below 29	.50	.48	...	...	...	...	.30	...	...
29 to 29.9	.54	.50	...	...	...	...	.30	...	...
30 to 30.9	.58	.52	...	...	...	...	.30	...	...
31 to 31.9	.62	.54	...	...	...	...	.30	...	...
32 to 32.9	.66	.56	...	...	...	...	.30	...	...
33 to 33.9	.70	.58	...	...	...	...	.30	...	...
34 to 34.9	.74	.60	.43	.33	.24	.13	.30	.46	.61
35 to 35.9	.77	.62	.45	.35	.25	.14	.30	.48	.63
36 to 36.9	.80	.64	.47	.37	.26	.15	.30	.50	.65
37 to 37.9	.83	.66	.49	.39	.27	.16	.30	.52	.67
38 to 38.9	.86	.68	.51	.41	.28	.17	.30	.54	.69
39 to 39.9	.89	.70	.53	.43	.29	.18	.30	.56	.71
40 and above	.92	.72	.55	.45	.30	.19	.30	.58	.73

Posted by Humble Oil & Refining Co. and Magnolia Petroleum Co.

Carson, Hutchinson and Wheeler Counties—	Jan. 1	Jan. 14	Mar. 10	Apr. 21	June 3	July 8	July 23	Aug. 22	Nov. 2
Below 29	.45	.43	...	...	...	...	.27	...	...
29 to 29.9	.49	.45	...	...	...	...	.27	...	...
30 to 30.9	.53	.47	...	...	...	...	.27	...	...
31 to 31.9	.57	.49	...	...	...	...	.27	...	...
32 to 32.9	.61	.51	...	...	...	...	.27	...	...
33 to 33.9	.65	.53	...	...	...	...	.27	...	...
34 to 34.9	.69	.55	.38	.30	.21	.13	.27	.41	.56
35 to 35.9	.72	.57	.40	.32	.22	.14	.27	.43	.58
36 to 36.9	.75	.59	.42	.34	.23	.15	.27	.45	.60
37 to 37.9	.78	.61	.44	.36	.24	.16	.27	.47	.62
38 to 38.9	.81	.63	.46	.38	.25	.17	.27	.49	.64
39 to 39.9	.84	.65	.48	.40	.26	.18	.27	.51	.66
40 and above	.87	.67	.50	.42	.27	.19	.27	.53	.68

Posted by Humble Oil & Refining Co. and Magnolia Petroleum Co.

	Jan. 1
Chalk	.75

Posted by Magnolia Petroleum Co.

CANADIAN FIELDS

	Jan. 1	Mar. 1	June 4	July 24	Aug. 24	Nov. 3
Oil Springs	1.57	....	1.62	1.82	1.87	1.97
Petrolia	1.50	....	....	1.75	1.80	1.90
Alberta, Canada—						
50 grav. and above	....	2.36	....	....	2.65	....
Below 50 gravity	....	1.87	....	....	2.08	....

Posted by Imperial Oil Co., Ltd. and Regal Oil Co.

EASTERN STATES

	Jan. 1	Mar. 11	Apr. 23	Apr. 26	June 3	July 11	July 28	Aug. 3	Aug. 17	Aug. 29	Sept. 4	Sept. 12	Sept. 16	Oct. 15	Nov. 1	Nov. 9	Dec. 1	Dec. 16
Pennsylvania grade oil in National Transit Lines (Pa.)	1.85	....	1.75	....	1.50	1.35	1.55	1.70	1.75	1.80	....	1.95	....	2.15	2.00	....	....	1.85
Pennsylvania grade oil in Southwest Pennsylvania Line (W. Va.)	1.80	....	1.70	1.60	1.35	1.20	1.40	1.55	1.60	1.65	....	1.80	....	....	1.70	....	....	1.55
Pennsylvania grade oil in Eureka Lines (Pa.)	1.70	....	1.50	....	1.25	1.10	1.30	1.45	1.50	1.55	....	1.70	....	....	1.60	....	....	1.45
Pennsylvania grade oil in Buckeye Lines (Ohio)	1.45	....	1.25	....	1.00	.95	1.15	1.30	1.35	1.40	1.45	1.60	....	....	1.50	....	1.40	1.25
Corning grade oil in Buckeye Lines (Ohio) 25-cent grade	1.15	.80	....	....	.65	.50	.65	....	....	....	.70	.75	.80	....	....	.85	....	....
Cabin Creek, W. Va.	1.70	....	....	....	....	1.10	1.30	....	1.50	1.55	....	1.70	....	....	1.60	....	....	1.45
Bradford Hollow, W. Va.	1.70	....	....	....	....	1.10	1.30	....	1.50	1.55	....	1.70	....	....	1.60	....	....	1.45
Ragland grade oil in Cumberland Lines (Ky.)	1.10	....	....	....	.60	.60	....	....	....	....	....	....	....	....	....	....	....	....
Wayne district in Cumberland Pipe Lines	1.17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Bradford district (Tide Water Pipe Line Co.)	2.15	....	2.00	....	1.75	1.60	1.80	....	2.00	2.10	....	2.25	....	2.15	2.00	....	....	1.85
Allegany district (Tide Water Pipe Line Co.)	2.15	....	2.00	....	1.75	1.60	1.80	....	2.00	2.10	....	2.25	....	2.15	2.00	....	....	1.85

Posted by Joseph Seep Purchasing Agency except in Bradford and Allegany Fields where postings are made by Tide Water Pipe Line Co.

(Continued on Next Page)

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EAST TEXAS

Rush County (East Texas) first posted February 10 by Panola Pipe Line Co. On March 26, East Texas crude placed on same gravity price schedule as Mid-Continent crude. Posting made by Magnolia followed by Humble April 21. On May 26, Humble, Gulf, Sinclair and The Texas Company posted crude below 35 gravity at 25 cents; 35 gravity at 27 cents with 2-cent differential to 40 gravity at 37 cents. Humble withdrew postings June 2. On June 24, Gulf, Stanolind and Sinclair posted flat price of 20 cents. On July 3, Sinclair Refining Co., and on July 6, Gulf Pipe Line Co. withdrew posted prices in East Texas. On July 17, Tidal Western Oil Co. posted 15 cents. On August 15, Sinclair posted 25 cents for royalty oil produced on company's leases. On August 22, Magnolia posted 60 cents. On August 22, Humble announced would pay highest price posted by substantial buying agency. On September 5, The Texas Company announced would not post a price but would pay prevailing price on day of delivery of oil. On August 17, Panola Pipe Line Co. posted 68 cents. On November 2, Magnolia, Panola, Tidal, Sinclair and Gulf posted 83 cents. On November 2, Humble posts following gravity price scale (same as Mid-Continent):

	Nov. 2
Below 29 degrees	.61
29 to 29.9	.63
30 to 30.9	.65
31 to 31.9	.67
32 to 32.9	.69
33 to 33.9	.71
34 to 34.9	.73
35 to 35.9	.75
36 to 36.9	.77
37 to 37.9	.79
38 to 38.9	.81
39 to 39.9	.83
40 and over	.85

GULF COAST

Jennings and Sorrento—Posted by Gulf Refining Co. of Louisiana. Price January 1, 80 cents; April 21 at 75 cents; June 3 at 40 cents; July at 30 cents; August 22 at 50 cents; and on November 2 at 65 cents.

High Island—Posted by Gulf Pipe Line Co. Price January 1, 75 cents; April 21 at 65 cents; June 2 at 40 cents; and on November 2 at 65 cents.

Markham—Posted by The Texas Company. Price January 1, 85 cents; January 15, 69 cents; January 14 at 50 cents; June 2 at 37 cents; July 8 at 25 cents; August 22 at 52 cents; and on November 2 at 67 cents.

Refugio, heavy—Posted by Humble Oil & Refining Co. Price January 1, 75 cents flat; January 14 at 69 cents; June 3 at 44 cents; July 8 at 35 cents; July 24 at 44 cents; August 22 at 60 cents; and November 2 at 75 cents.

	Jan. 1	Jan. 14	Apr. 21	June 1
Grade A	1.00	.80	.70	*.60

(Grade A and B classification discontinued.)
Posted by Humble Oil & Refining Co. and Vacuum Oil Co.
*Posted by Vacuum.

Gulf Coast Grade B and Refugio light—

	*Jan. 1	Jan. 14	Apr. 21	June 2	July 8	July 24	Aug. 22	Nov. 2
Below 25	.75	.69	.60	.44	.31	.40	.55	.70
25 to 25.9	.92	.71	.61	.45	.32	.41	.56	.71
26 to 26.9	.94	.73	.63	.46	.33	.42	.57	.72
27 to 27.9	.96	.75	.65	.47	.34	.43	.58	.73
28 to 28.9	.98	.77	.67	.48	.35	.44	.59	.74
29 to 29.9	1.00	.79	.69	.49	.36	.45	.60	.75
30 to 30.9	1.02	.81	.71	.50	.37	.46	.61	.76
31 to 31.9	1.04	.83	.73	.51	.38	.47	.62	.77
32 to 32.9	1.06	.85	.75	.52	.39	.48	.63	.78
33 to 33.9	1.08	.87	.77	.53	.40	.49	.64	.79
34 to 34.9	1.10	.89	.79	.54	.41	.50	.65	.80
35 to 35.9	1.12	.91	.81	.55	.42	.51	.66	.81
36 to 36.9	1.14	.93	...	.56	...	...	.67	.82
37 to 37.9	1.16	.95	...	.57	...	...	.68	.83
38 to 38.9	1.18	.97	...	.58	...	...	.69	.84
39 to 39.9	1.20	.99	...	.59	...	...	.70	.85
40 and above	1.22	1.01	...	.60	...	...	.71	.86

*Humble was paying 75 cents for Grade B below 25 degrees and 92 cents for 25-25.9 gravity with a 2-cent differential for each degree upward to 40 degrees and above at $1.22. Gulf Refining Co. of Louisiana, The Texas Company and Gulf Pipe Line Co. of Texas were paying as follows for Grade B: Below 25 degrees, 60 cents; 25-25.9 degrees, 71 cents, with a 2-cent differential for each degree upward to and including 40 degrees and above at $1.01.

MEXICAN CRUDES

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Panuco heavy, f.o.b. Tampico	.36	...	.46	.46	.44	.44	.44	.44	.45	.45	...	...

Note—Prices based on transactions for previous month.

SOUTH CENTRAL AND SOUTHWESTERN TEXAS

Darst Creek—Posted by Humble Oil & Refining Co., Texas Pipe Line Co. and Magnolia Petroleum Co.; January 1 at 90 cents; April 21 at 53 cents; June 3 at 37 cents; July 8 at 20 cents; July 23 at 37 cents; August 22 at 52 cents; and on November 2 at 58 cents.
Thrall—Magnolia Petroleum Co. posts same price as corresponding grade Mid-Continent crude less 19½ cents per cwt. freight.

	Jan. 1	Jan. 14	Feb. 10	Mar. 10	Mar. 26	Apr. 21	Apr. 23	June 3	July 8	July 23	Aug. 22	Nov. 2
Luling	.75	....	....	.45	....	....	.38	.22	....	....	.34	.49
Mirando	.75	.69	....	....	....	.60	....	.44	.35	.44	.60	.75
Corsicana, heavy	.75	....	....	.45	....	....	.38	.22	....	....	.34	.49
Salt Flat	.90	....	....	....	....	.53	....	.37	.20	.37	.52	.60
Pettus	1.10	....	....	....	....	.75	....	.50	.35	.50	.70	.85
Dobrowolski	See Mid-Continent gravity table											
Lytton Springs	See Mid-Continent gravity table											
Somerset	See Mid-Continent gravity table											

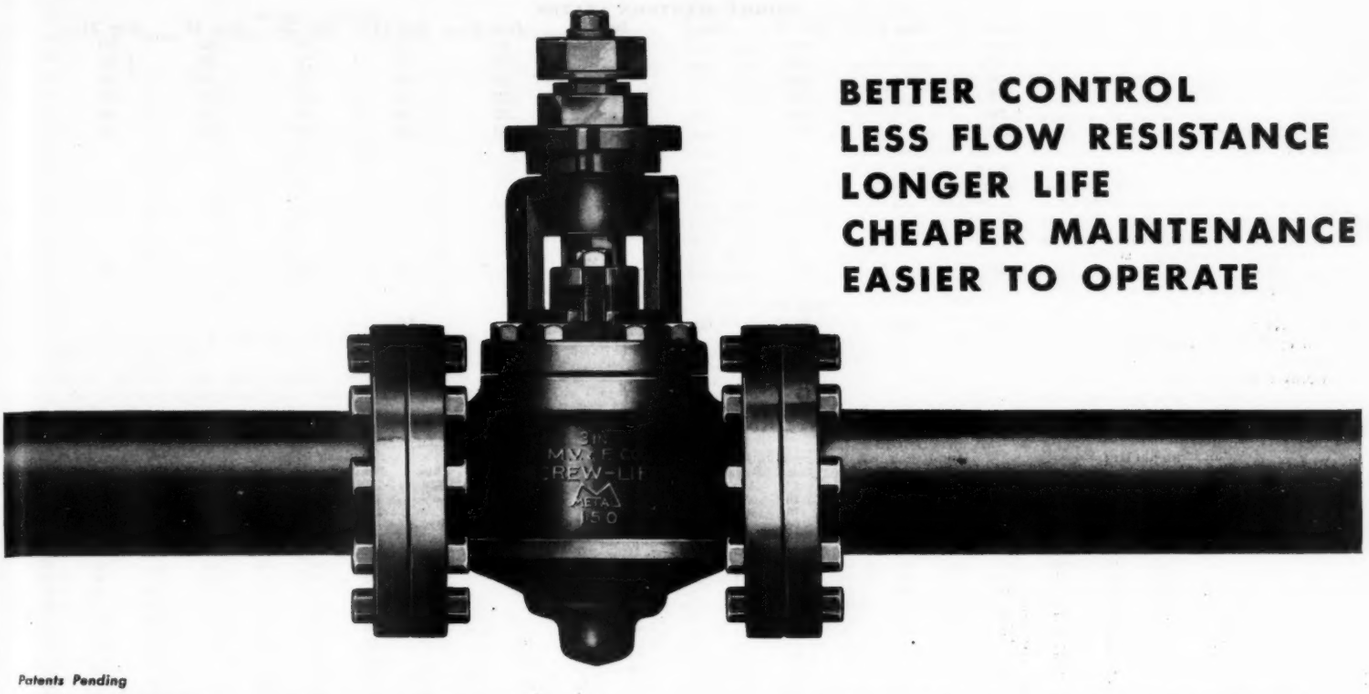
Note—Luling and Corsicana heavy posted by the Magnolia Petroleum Co. and Grayburg Pipe Line Co. Mirando (Webb, Jim Hogg and Zapata Counties) by Texpata Pipe Line Co., Magnolia Pipe Line Co., Humble Oil & Refining Co. and Crown Central Pipe Line Co. Somerset posted by Grayburg Pipe Line Co.

ROCKY MOUNTAIN FIELDS

Salt Creek—	Jan. 1	Mar. 5	Apr. 21	June 1	June 2	June 3	July 10	July 24	July 25	Aug. 18	Aug. 22	Aug. 24	Nov. 2	Nov. 3
Below 29 gravity	....	....	....	....	....	....	$.10	$.30	....	....	$.46	....	$.61	....
29 to 29.9	$.69	$.45	....	$.26	....	....	.11	.31	....	....	.48	....	.63	....
30 to 30.9	.73	.47	....	.27	....	....	.12	.32	....	....	.50	....	.65	....
31 to 31.9	.77	.49	....	.28	....	....	.13	.33	....	....	.52	....	.67	....
32 to 32.9	.81	.51	....	.29	....	....	.14	.34	....	....	.54	....	.69	....
33 to 33.9	.85	.53	....	.30	....	....	.15	.35	....	....	.56	....	.71	....
34 to 34.9	.89	.55	....	.31	....	....	.16	.36	....	....	.58	....	.73	....
35 to 35.9	.92	.57	....	.32	....	....	.17	.37	....	....	.60	....	.75	....
36 to 36.9	.95	.59	....	.33	....	....	.18	.38	....	....	.62	....	.77	....
37 and above	.98	.61	....	.34	....	....	.19	.39	....	....	.64	....	.79	....
Rock Creek (Wyo.)	1.01	.66	....	....	.45	....	.30	....	.50	.65	....	.70	....	.85
Big Muddy	1.00	.65	....	....	.40	....	.25	....	.45	.60	....	.60	....	.83
Grass Creek, light	1.25	.90	....	....	.62	....	.47	....	.65	.80	....	.90	....	....
Grass Creek, heavy	.90	....	....	....	.62	....	....	....	....	....	....	....	....	....
Fort Collins	....	....	....	....	.30	....	.15	....	.35	....	....	....	....	....
Elk Basin	1.25	.90	....	....	.62	....	.47	....	.65	.80	....	.90	....	....
Lance Creek	1.33	.98	....	....	.75	....	.60	....	.80	.95	....	1.05	....	....
Poison Spider	1.00	.70	....	....	....	....	....	....	....	....	....	....	....	....
Rex Lake	1.10	....	....	....	....	....	....	....	....	....	....	....	....	....
Cat Creek (Mont.)	1.25	....	....	....	....	.60	.45	....	.65	....	....	.90	....	....
Sunburst	1.55	....	....	....	....	.85	.70	....	.80	....	....	*.90	....	1.00
Artesia (N. Mex.)	.75	.40	.32½	....	....	.25	....	....	....	....	....	.35	....	....
Hogback	1.40	....	....	....	....	.65	.50	....	....	....	....	.80	....	....
Florence	....	....	....	....	.27	....	.12	....	.32	....	....	....	....	....
Iles—		Mar. 7												
33 gravity and above	.87	.72	....	....	....	....	.30	....	.45	....	....	.75	....	....
Below 33 gravity	.65	.50	....	....	....	....	.30	....	.45	....	....	.53	....	....
Lea County (See West Texas gravity table)	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Wellington	....	....	....	....	.25	....	.10	....	.30	....	....	....	....	....
Dutton Creek	....	....	....	....	1.01	....	.25	....	.45	....	....	.60	....	....
Frannie, light	....	....	....	....	.35	....	.20	....	.40	....	....	.53	....	....
Frannie, heavy	....	....	....	....	.25	....	.10	....	.30	....	....	.43	....	....
Hudson	.75	....	....	....	.65	....	....	....	....	....	....	....	....	....
Lander	....	.40	....	....	....	....	....	....	....	....	....	....	....	....
Border (Mont.)	....	....	....	....	....	1.55	....	....	....	....	....	....	....	....
Dry Creek	....	....	....	....	....	....	.60	....	....	....	....	1.00	....	....

Note—Salt Creek, Cat Creek, Hudson, Greybull and Hogback posted by Midwest Refining Co. and the remainder by the Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin. Lost Soldier posted by Producers & Refiners Corp. Artesia posted by Continental Oil Co. Border and Red Coulee posted by Imperial Refining Co. Ohio Oil Co. ceased posting Artesia on March 5, 1931. Lea County posted by Humble Oil & Refining Co. Fort Collins, Wellington, Orchard and Florence posted by the Continental Oil Co. Osage posted by Arro Oil & Refining Co.
*Ohio Oil 80 cents.

(Continued on Next Page)



BETTER CONTROL
LESS FLOW RESISTANCE
LONGER LIFE
CHEAPER MAINTENANCE
EASIER TO OPERATE

Patents Pending

THE "SCREW-LIFT" VALVE

THE "Screw-Lift" Valve has demonstrated the value of getting back to fundamentals. In design, it is the essence of simplicity and strength, built with a full knowledge of the operating problems peculiar to the gas and petroleum industry.

This is the first valve built in Meehanite, the high tensile, non-growing, corrosion-resistant metal successfully used in heavy duty equipment in many other industries.

Unlike other valves, the operating mechanism of the "Screw-Lift" Valve is completely separated from the valve body through which the line fluids pass. The line fluids cannot contact this mechanism. The operating mechanism is also fully protected against the action of atmospheric moisture, fumes or grit. And still it is readily accessible without dismantling the valve.

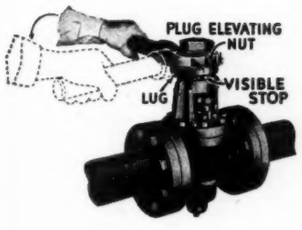
The packing gland also is within easy reach. It is not buried in the valve body. The "Screw-Lift" can be repacked easily and quickly while the line is under pressure and any mechanic can handle the job, for the packing gland itself is of the conventional type familiar everywhere.

The valve body, due to the greater rigidity of its design and of Meehanite metal, successfully resists line strain without dangerous deflection. The adequately piloted plug, carefully machined, ground and lapped, insures a tight closure at all times, regardless of pressure or of rapid temperature changes. Nor is a heavy grease filler necessary to effect a tight shut-off. The lubricant used with the "Screw-Lift" Valve is of the ordinary consistency and is applied by the standard grease gun.

The visible stop on the plug lifting nut makes it impossible to jam the "Screw-Lift" Valve in its raised position.

Its adequate valve opening assures streamline flow. No turbulence to cut down line capacity.

The "Screw-Lift" Valve is used in the control of oil, gas, gasoline, steam and water lines in the field, in the refinery and in the trunk lines. It is designed for working pressures up to 6,000 pounds and for all working temperatures up to 900 degrees F. Either full round or elongated plug opening is available and either screwed end or flanged end valves can be supplied.



To operate

FIRST: Turn the Plug Elevating Nut counterclockwise until lug on its under flange meets Visible Stop. This unseats the Plug.

SECOND: One quarter turn of the Plug Rotating Nut opens the valve.

THIRD: Reseat the Plug by turning the Plug Elevating Nut to its initial position.

THE TIMKEN MICHIGAN CO.

3601 Parkinson Ave., Detroit, Michigan

MIDDLE WESTERN STATES

	Jan. 1	Jan. 15	Mar. 6	Apr. 1	June 1	June 2	July 11	July 25	Aug. 18	Aug. 24	Nov. 3
Lima	1.10	...	.90	...	...	.70	.55	.70	.85	.90	1.00
Wooster	1.40	...	.99	...	...	.73	.58	.73	.90	1.00	1.15
Illinois	1.30	...	.80	...	...	.55	.40	.55	.70	.80	.95
Indiana	.87	...	.50	...	...	.35	.20	.35	.50	.60	...
Princeton	1.20	...	.80	...	...	.55	.40	.55	.70	.80	.95
Western Kentucky	1.15	...	.75	...	...	.50	.35	.50	.65	.73	.90
Posted by Ohio Oil Co.											
Michigan—											
Dundee	...	...	...	...	...	...	...	...	...	...	...
Upper and Lower Traverse sands	...	...	...	...	...	...	...	...	...	...	...
Posted by Standard Oil Co. of Indiana for boat shipment same as Mid-Continent gravity scale.											
Midland	1.10	...	.75	...	.52	...	.37	.57	...	.73	*.55
Posted by Pure Oil Co.											
			Mar. 7								
Oil City (Ky.)	1.10	.80	.70	.60	...	...	.50	...	...	...	...
Posted by Stoll Oil Refining Co.											

*October 9.

CALIFORNIA CRUDE OIL PRICES

Gravity—	Signal Hill				Alamitos Heights, Seal Beach				Huntington Beach‖				Athens, Rosecrans, Dominguez				Torrance				Santa Fe Springs			
	Jan. 1	Mar. 20	Mar. 31	June 19	Jan. 1	Mar. 20	Mar. 31	June 19	Jan. 1	Mar. 20	Mar. 31	June 19	Jan. 1	Mar. 20	Mar. 31	June §20	Jan. 1	Mar. 20	Mar. 31	June 19	Jan. 1	Mar. 20	Mar. 31	June 19
14 to 14.9	.70	.65	.65	.65	.70	.65	.65	.65	.70	.65	.65	.65	....	....	....	....	.70	.65	.65	.65	....	....	....	....
15 to 15.9	.70	.65	.65	.65	.70	.65	.65	.65	.70	.65	.65	.65	....	....	....	....	.70	.65	.65	.65	....	....	....	....
16 to 16.9	.70	.65	.65	.65	.70	.65	.65	.65	.70	.65	.65	.65	....	....	....	....	.70	.65	.65	.65	....	....	....	....
17 to 17.9	.70	.65	.65	.65	.70	.65	.65	.65	.70	.65	.65	.65	....	....	....	....	.70	.65	.65	.65	....	....	....	....
18 to 18.9	.76	.65	.65	.65	.76	.65	.65	.65	.76	.65	.65	.65	....	....	....	....	.76	.65	.65	.65	....	....	....	....
19 to 19.9	.82	.65	.65	.65	.82	.65	.65	.65	.82	.65	.65	.65	....	....	....	....	.82	.65	.65	.65	....	.65	.65	....
20 to 20.9	.88	.66	.65	.65	.88	.66	.65	.65	.88	.66	.65	.65	....	....	....	....	.88	.66	.65	.65	....	.66	.65	....
21 to 21.9	.94	.66	.62	.65	.94	.66	.62	.65	.94	.66	.62	.65	....	....	....	....	.94	.66	.62	.65	.92	.66	.62	....
22 to 22.9	1.00	.66	.59	.65	1.00	.66	.59	.65	1.00	.66	.59	.66	....	....	....	....	1.00	.66	.59	.66	.95	.66	.59	....
23 to 23.9	1.07	.66	.56	.67	1.07	.66	.56	.67	1.07	.66	.56	.68	....	....	....	....	1.07	.66	.56	.67	1.01	.66	.56	....
24 to 24.9	1.12	.66	.53	.69	1.12	.66	.53	.69	1.12	.66	.53	.70	1.12	.66	.53	.69	1.12	.66	.53	.68	1.05	.66	.53	.65
25 to 25.9	1.17	.67	.50	.71	1.17	.67	.50	.71	1.17	.67	.50	.72	1.17	.67	.50	.71	1.17	.67	.50	.70	1.09	.67	.50	.66
26 to 26.9	1.22	.67	.47	.73	1.22	.67	.47	.73	1.22	.67	.47	.74	1.22	.67	.47	.73	1.22	.67	.47	....	1.13	.67	.47	.65
27 to 27.9	1.26	.67	.44	.75	1.26	.67	.44	.75	1.26	.67	.44	.76	1.27	.67	.44	.75	1.26	.67	.44	....	1.18	.67	.44	.68
28 to 28.9	1.30	.67	.41	.77	1.30	.67	.41	....	1.30	.67	.41	....	1.32	.67	.41	.77	1.30	.67	.41	....	1.23	.67	.41	.71
29 to 29.9	1.34	.67	.38	.79	1.34	.67	.38	....	1.34	.67	.38	....	1.37	.67	.38	.79	1.34	.67	.38	....	1.28	.67	.38	.73
30 to 30.9	1.38	.68	.35	.81	1.38	.68	.35	....	1.38	.68	.35	....	1.42	.68	.35	.81	1.38	.68	.35	....	1.33	.68	.35	.75
31 to 31.9	1.43	.68	....	....	1.43	.68	....	....	1.43	.68	....	....	1.47	.68	....	.83	1.43	.68	....	....	1.38	.68	....	.78
32 to 32.9	1.48	.68	....	....	1.48	.68	....	....	1.48	.68	....	....	1.52	.68	....	.85	1.48	.68	....	....	1.42	.68	....	.80
33 to 33.9	....	....	....	....	....	....	....	....	....	....	....	....	1.57	.68	....	.87	....	....	....	....	1.48	.68	....	.83
34 to 34.9	....	....	....	....	....	....	....	....	....	....	....	....	1.62	.68	....	.89	....	....	....	....	1.53	.68	....	.85
35 to 35.9	....	....	....	....	....	....	....	....	....	....	....	....	1.66	.69	....	....	....	....	....	....	1.58	.69	....	.87
36 to 36.9	....	....	....	....	....	....	....	....	....	....	....	....	1.72	.69	....	....	....	....	....	....	1.63	.69	....	....
37 to 37.9	....	....	....	....	....	....	....	....	....	....	....	....	1.78	.69	....	....	....	....	....	....	1.68	.69	....	....
38 to 38.9	....	....	....	....	....	....	....	....	....	....	....	....	1.84	.69	....	....	....	....	....	....	1.73	.69	....	....
39 to 39.9	....	....	....	....	....	....	....	....	....	....	....	....	1.90	.69	....	....	....	....	....	....	1.78	.69	....	....
40 to 40.9	....	....	....	....	....	....	....	....	....	....	....	....	1.96	.70	....	....	....	....	....	....	....	.70	....	....
41 to 41.9	....	....	....	....	....	....	....	....	....	....	....	....	2.02	.70	....	....	....	....	....	....	....	....	....	....
42 to 42.9	....	....	....	....	....	....	....	....	....	....	....	....	2.08	.70	....	....	....	....	....	....	....	....	....	....

Gravity—	Playa Del Rey* †			Richfield				Newhall, McKittrick Kern River‡				Coalinga				Lost Hills				Sunset-Midway, Elk Hills, Buena Vista Hills			
	Jan. 1	Mar. 20	June 19	Jan. 1	Mar. 20	Mar. 31	June 19	Jan. 1	Mar. 20	Mar. 31	June 19	Jan. 1	Mar. 20	Mar. 31	June 19	Jan. 1	Mar. 20	Mar. 31	June 19	Jan. 1	Mar. 20	Mar. 31	June 19
14 to 14.9	....	....	....	.70	.65	.65	.65	.50	.55	.50	.55	.55	.55	.50	.55	.55	.55	.50	.55	.55	.55	.50	.55
15 to 15.9	....	....	....	.70	.65	.65	.65	....	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55
16 to 16.9	....	....	....	.70	.65	.65	.65	....	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55
17 to 17.9	....	....	....	.70	.65	.65	.65	....	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55	.55
18 to 18.9	....	....	....	.76	.65	.65	.65	....	.55	.55	.55	.62	.55	.55	.55	.62	.55	.55	.55	.62	.55	.55	.55
19 to 19.9	....	....	.65	.82	.65	.65	.65	....	.55	.55	.55	.70	.55	.55	.55	.70	.55	.55	.55	.70	.56	.55	.55
20 to 20.9	.74	.56	.65	.88	.66	.65	.65	....	.56	.55	....	.78	.56	.56	.56	.78	.56	.55	.55	.78	.56	.55	.55
21 to 21.9	.77	.56	.66	.94	.66	.62	.66	....	.56	.53	....	.86	.56	.53	.55	.86	.56	.53	.57	.86	.56	.53	.55
22 to 22.9	.81	.56	.67	1.00	.66	.59	.68	....	.56	.51	....	.94	.56	.51	.55	.94	.56	.51	.59	.84	.56	.51	.56
23 to 23.9	.84	.56	.68	1.07	.66	.56	.70	....	.56	.49	....	1.02	.56	.49	.56	1.02	.56	.49	.60	1.02	.56	.49	.58
24 to 24.9	.87	.56	.69	1.12	.66	.53	.72	....	.56	.47	....	1.04	.56	.47	.55	1.06	.56	.47	.62	1.06	.57	.47	.61
25 to 25.9	.90	.57	.70	1.17	.67	.50	.74	....	.57	.45	....	1.06	.57	.45	.57	1.10	.57	.45	.64	1.10	.57	.45	.64
26 to 26.9	....	....	....	1.22	.67	.47	....	....	.57	.42	....	1.08	.57	.43	....	1.14	.57	.43	.66	1.14	.57	.43	.66
27 to 27.9	....	....	....	1.26	.67	.44	....	....	.57	.41	....	1.11	.57	.41	....	1.18	.57	.41	.67	1.18	.57	.41	.68
28 to 28.9	....	....	....	1.30	.67	.41	....	....	.57	.39	....	1.15	.57	.39	....	1.23	.57	.39	.69	1.23	.57	.39	.71
29 to 29.9	....	....	....	1.34	.67	.38	....	....	.57	.37	....	1.19	.57	.37	....	1.29	.57	.37	.71	1.29	.58	.37	.74
30 to 30.9	....	....	....	1.38	.68	.35	....	....	.58	.35	....	1.23	.58	.35	....	1.35	.58	.35	.72	1.35	.58	.35	.76
31 to 31.9	....	....	....	1.43	.68	....	....	....	....	....	....	1.27	.58	....	....	1.40	.58	....	....	1.40	.58	....	....
32 to 32.9	....	....	....	1.48	.68	....	....	....	....	....	....	1.31	.58	....	....	1.47	.58	....	....	1.47	.58	....	....
33 to 33.9	....	....	....	....	....	....	....	....	....	....	....	1.35	.58	....	....	1.53	.58	....	....	1.53	.58	....	....
34 to 34.9	....	....	....	....	....	....	....	....	....	....	....	1.39	....	....	....	1.59	....	....	....	1.59	....	....	....
35 to 35.9	....	....	....	....	....	....	....	....	....	....	....	1.43	....	....	....	1.65	....	....	....	1.65	....	....	....

Gravity—	Inglewood			Olinda-Brea Canon				Kettleman Hills†			Wheeler Ridge			Montebello				Whittier, La Habra			Santa Paula			
	Jan. 1	Mar. 20	June 19	Jan. 1	Mar. 20	Mar. 31	June 19	Jan. 1	Mar. 20	June 20	Jan. 1	Mar. 20	June 19	Jan. 1	Mar. 20	Mar. 31	June 19	Jan. 1	Mar. 20	June 19	Jan. 1	Mar. 20	Mar. 31	June 20
14 to 14.9	.70	.65	.65	.70	.65	.65	.65	....	....	....	.55	.55	.55	.70	.65	.65	.65	.70	.65	.65	....	.65	.60	.65
15 to 15.9	.70	.65	.65	.70	.65	.65	.65	....	....	....	.55	.55	.55	.70	.65	.65	.65	.70	.65	.65	....	.65	.60	.65
16 to 16.9	.70	.65	.65	.70	.65	.65	.65	....	....	....	.55	.55	.55	.70	.65	.65	.65	.70	.65	.65	....	.65	.60	.65
17 to 17.9	.70	.65	.65	.70	.65	.65	.65	....	....	....	.55	.55	.55	.70	.65	.65	.65	.70	.65	.65	....	.65	.60	.65
18 to 18.9	.76	.65	.65	.76	.65	.65	.65	....	....	....	.62	.55	.55	.71	.65	.65	.65	.76	.65	.65	....	.65	.60	.65
19 to 19.9	.82	.65	.65	.82	.65	.65	.65	....	....	....	.70	.55	.55	.77	.65	.65	.65	.82	.65	.65	....	.65	.60	.65
20 to 20.9	.88	.66	.66	.88	.66	.65	.66	....	....	....	.78	.56	.55	.83	.66	.65	.65	.87	.66	.65	....	.65	.58	.65
21 to 21.9	.94	.66	.68	.94	.66	.62	.67	....	....	....	.86	.56	.55	.90	.66	.62	.65	.93	.66	.65	....	.65	.56	.65
22 to 22.9	1.00	.66	.70	1.00	.66	.59	.68	....	....	....	.94	.56	.55	.97	.66	.59	.65	.98	.66	.65	....	.65	.53	.65
23 to 23.9	1.07	.66	.72	1.07	.66	.56	.70	....	....	....	1.02	.56	.55	1.05	.66	.56	.65	1.04	.66 *	....	....	.65	.50	.65
24 to 24.9	1.12	.66	.74	1.12	.66	.53	.72	....	....	....	1.04	.56	.55	1.08	.66	.53	.65	1.08	.66	....	....	.66	.47	.66
25 to 25.9	1.17	.67	.76	1.17	.67	.50	.74	....	....	....	1.06	.57	.55	1.11	.67	.50	.65	1.12	.67	....	....	.66	.44	.68
26 to 26.9	1.22	.67	....	1.22	.67	.47	.76	....	....	....	1.08	.57	....	1.15	.67	.47	....	1.16	.67	....	....	.66	.41	.70
27 to 27.9	1.26	.67	....	1.26	.67	.44	.78	....	....	....	1.10	.57	....	1.19	.67	.44	....	1.21	.67	....	....	.66	.38	.72
28 to 28.9	1.30	.67	....	1.30	.67	.41	.80	....	....	....	....	....	....	1.23	.67	.41	....	1 25	.67	....	....	.66	.35	.74
29 to 29.9	1.34	.67	....	1.34	.67	.38	....	....	....	....	....	....	....	1.26	.67	.38	....	1.29	.67	....	....	.66	....	.76
30 to 30.9	1.38	.68	....	1.38	.68	.35	....	....	.58	.66	....	....	....	1.29	.68	.35	....	1.33	.68	....	....	.67	....	.78
31 to 31.9	1.43	.68	....	1.43	.68	....	....	....	.58	.66	....	....	....	....	....	....	....	....	....	....	....	.67	....	....
32 to 32.9	1.48	.68	....	1 48	.68	....	....	....	.58	.66	....	....	....	....	....	....	....	....	....	....	....	.67	....	....
33 to 33.9	....	....	....	....	....	....	....	....	.58	.66	....	....	....	....	....	....	....	....	....	....	....	.67	....	....
34 to 34.9	....	....	....	....	....	....	....	....	.58	.66	....	....	....	....	....	....	....	....	....	....	....	....	....	....
35 to 35.9	....	....	....	....	....	....	....	....	.59	.66	....	....	....	....	....	....	....	....	....	....	....	....	....	....
36 to 36.9	....	....	....	....	....	....	....	....	.59	.66	....	....	....	....	....	....	....	....	....	....	....	....	....	....
37 to 37.9	....	....	....	....	....	....	....	....	.59	.66	....	....	....	....	....	....	....	....	....	....	....	....	....	....
38 to 38.9	....	....	....	....	....	....	....	....	.59	.66	....	....	....	....	....	....	....	....	....	....	....	....	....	....
39 to 39.9	....	....	....	....	....	....	....	....	.59	.66	....	....	....	....	....	....	....	....	....	....	....	....	....	....
40 to 40.9	....	....	....	....	....	....	....	....	.60	.66	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Postings by Standard Oil Co. of California and the Union Oil Co.

Note—On March 10 Union Oil Co. posted lower prices in fields in which it purchased crude and on March 15 again reduced prices, followed by the Standard Oil Co. of California on March 30. On March 30 Union Oil Co. posted lower prices for high gravity oils than for low gravity crudes, and on March 31 this schedule was adopted by the Standard Oil Co. of California.

*Prices subject to 5-cent gathering charge in Playa Del Rey Field.

†Posting discontinued temporarily in Playa Del Rey and Kettleman Hills Fields on March 31.

‡On January 1, Kern River, Newhall-McKittrick and Fruitvale, 11 to 13.9 gravity, 50 cents.

‖June 20 Union Oil Co. posted Huntington Beach crude as follows: 14 to 22 gravity, 65 cents, with 2-cent advance per degree upward, making 23 gravity oil at 67 cents and a top price of 75 cents for 27 gravity.

§Union Oil Co. only.

(Continued on Next Page)

WEST TEXAS

Crane, Upton, Ector, Crockett, Howard, Glasscock, Mitchell, Texas, and Lea*, New Mexico—

Gravity—	Jan. 1	Mar. 10	Apr. 21*	June 3	July 8	July 23	Aug. 22	Nov. 2
Below 25	.50	.35	.30	.25	.10	.25	.35	.50
25 to 25.9	.52	.35	.30	.25	.10	.25	.35	.50
26 to 26.9	.54	.35	.30	.25	.10	.25	.35	.50
27 to 27.9	.56	.35	.30	.25	.10	.25	.35	.50
28 to 28.9	.58	.35	.30	.25	.10	.25	.35	.50
29 to 29.9	.60	.35	.30	.25	.10	.25	.35	.50
30 to 30.9	.62	.35	.30	.25	.10	.25	.35	.50
31 to 31.9	.64	.35	.30	.25	.10	.25	.35	.50
32 to 32.9	.66	.35	.30	.25	.10	.25	.35	.50
33 to 33.9	.68	.35	.30	.25	.10	.25	.35	.50
34 to 34.9	.70	.35	.30	.25	.10	.25	.35	.50
35 to 35.9	.72	.35	.30	.25	.10	.25	.35	.50
36 and above	.74	.35	.30	.25	.10	.25	.35	.50

Posted by Humble Oil & Refining Co., Kay County Gas Co., Gulf Refining Co. and Magnolia Petroleum Co.

*April 21, Humble and other buyers posted Lea, New Mexico, crude at 32½ cents flat but followed subsequent price changes as shown in other fields thereafter.

Pecos and Winkler—

Gravity—	Jan. 1	Mar. 10	Apr. 21	June 3	July 8	July 23	Aug. 22	Nov. 2
Below 25	.55	.40	.35	.25	.10	.25	.35	.50
25 to 25.9	.57	.40	.35	.25	.10	.25	.35	.50
26 to 26.9	.59	.40	.35	.25	.10	.25	.35	.50
27 to 27.9	.61	.40	.35	.25	.10	.25	.35	.50
28 to 28.9	.63	.40	.35	.25	.10	.25	.35	.50
29 to 29.9	.65	.40	.35	.25	.10	.25	.35	.50
30 to 30.9	.67	.40	.35	.25	.10	.25	.35	.50
31 to 31.9	.69	.40	.35	.25	.10	.25	.35	.50
32 to 32.9	.71	.40	.35	.25	.10	.25	.35	.50
33 to 33.9	.73	.40	.35	.25	.10	.25	.35	.50
34 to 34.9	.75	.40	.35	.25	.10	.25	.35	.50
35 to 35.9	.77	.40	.35	.25	.10	.25	.35	.50
36 and above	.79	.40	.35	.25	.10	.25	.35	.50

Posted by Humble Oil & Refining Co.

YEAR'S RECORD OF THE GREATEST OIL FIELD

(Continued from Page 62)

of the field which fail to produce on the pump will be abandoned.

Many Crooked Holes

There have been many crooked holes drilled in the district, especially during the wild orgy of drilling preceding the shutdown and curtailment. One well was off as much as 75 degrees from vertical and another off 53 degrees. One well was abandoned, due to crooked drilling, and several others had to be plugged back and redrilled. Surveying of holes as they are drilled has become almost a general practice in the field as the small cost of surveying a well will often save hundreds of dollars in drilling costs.

Drilling costs dropped in the field in view of the fact that so many contractors entered the district, coming from all over the United States, making contracting competition keen. Costs of supplies also only half as large as the Farrell sale. Humble Oil & Refining Co. purchased that well and block.

The Tidal Oil Co. purchased 2,296 acres and 26 producing wells from the Mid-Kansas Oil & Gas Co. during the middle of 1931 for $3,000,000. One loading rack and a gathering line were included in this deal. The acreage was located in Gregg and northern Rusk County, and put the purchasing company in a place with the larger acreage holders and producers in the district.

The Atlantic Oil Producing Co. did not enter the district until late, after acreage had advanced in price beyond which most of the companies had paid for protection and producing acreage. It purchased 1,040 acres from Cranfill & Reynolds in the Alvice and F. Johnson Surveys, Gregg County, for around $1,500,000.

Peyton Brothers' No. 1 Perry in the L. N. Sparks Survey, approximately 3½ miles south of production in the Joiner area, southern Rusk County, proved a great surprise in December, 1931, when it topped sand at 3,678 feet and was drilled to a total depth of 3,718 feet. It made an estimated 3,000,000 to 4,000,000 feet of dry gas. This was the first dry gas encountered in the field, and the first well to produce gas with no oil, consequently it had engineers, geologists and producing men guessing as to what will be the outcome of the well and whether it is to extend production farther south or define the southern end of the field at that point. Casing was cemented and the outcome of the well will not be known until the plug is drilled.

On the opposite end of the field, Cranfill & Reynolds' No. 1 Rash in the Eubanks Survey, Upshur County, is another test which is an enigma. It has been standing shut down at a total depth of 3,728 feet for several weeks after it made a good showing on a drill stem test, and casing was cemented preparatory to drilling in. It is expected to drill in soon, but nothing definite has been reported as to just when this will be done. This test is approximately 3½ miles north of production in the Lathrop Pool, and it is questionable whether it is to extend production that distance or define the northern limits of the pool.

The most important change made in the Van Pool, Van Zandt County, during 1931 was the raising of the allowable from 43,000 bbls. to 50,000 bbls. and putting proration on an acre-foot basis, instead of the potential basis previously used.

Trinity Sand Test

The Pure Oil Co. also started drilling on a Trinity sand test in the northern part of the pool during the fore part of November, 1931. That test is not yet deep enough to give an evidence of production. If it proves a producer it will prove several hundred acres good for production at sand below the Woodbine sand from which the wells are now producing. It will also lead to the drilling deeper of many wildcats in the district and will later lead some company to drill a deep test in the large East Texas producing area, when production finally falls off to the pumping stage in that producing area. A Trinity sand producer will change the entire situation in East Central and East Texas, and the deep test in Van will be closely watched for developments when it reaches a depth around 7,500 and 8,000 feet.

Initial Production

On all other fields in the United States it has been possible to estimate the real or potential initial production of oil wells, but this is not so of the East Texas Field, and the production figures given in the accompanying table of completed work are not intended as such. They represent the actual production of the wells on gauges running all the way from 10 minutes to 24 hours. We have not found any engineer or other production expert willing to say he could safely estimate the average first 24-hour production of all the wells completed in the field last year. Potentially one might guess that the weighted average production was 3,000 bbls. per well, which would have made the potential initial production of the completions in Rusk, Gregg, Upshur and Smith Counties about 10,837,000 bbls. instead of the 2,205,851 bbls. credited to them in the table. But such an estimate would at once precipitate an argument. "It is too high!" or "It is too low!" So we must run the figures as they are reported from the field on a basis of whatever time the individual wells were gauged, which, as said before, ran all the way from a few minutes to 24 hours.

EAST CENTRAL AND EAST TEXAS

Wells Completed by Districts in 1931

County—	Comp.	Prod.	Abd.	Gas
Angelina	2	0	2	0
Anderson	4	30	3	0
Bowie	2	0	2	0
Cherokee	13	0	13	0
Camp	2	0	2	0
Delta	3	0	3	0
Ellis	1	0	1	0
Fannin	2	0	2	0
Freestone	1	0	1	0
Franklin	1	0	1	0
Gregg	1,513	560,858	42	0
Grimes	1	0	1	0
Henderson	5	0	5	0
Hill	2	0	2	0
Houston	2	0	2	0
Lamar	2	0	2	0
Limestone	6	0	6	0
Leon	1	0	1	0
Morris	1	0	1	0
Nacogdoches	14	0	14	0
Navarro	1	0	1	0
Polk	1	0	1	0
Rains	1	0	1	0
Red River	2	0	2	0
Rusk	1,551	1,572,789	44	0
Smith	155	52,090	15	0
Titus	1	0	1	0
Tyler	2	0	2	0
Upshur	177	20,114	16	0
Van Zandt	107	244,816	17	7
Walker	1	0	1	0
Wood	3	0	3	6
Total, 1931	3,580	2,450,697	210	7

Completions by Month

Month—	Comp.	Prod.	Abd.	Gas
January	23	76,325	2	1
February	42	120,235	9	1
March	91	262,421	23	1
April	242	1,381,888	29	4
May	286	116,183	31	0
June	372	113,964	19	0
July	437	100,701	25	0
August	283	61,510	11	0
September	304	40,191	17	0
October	469	58,169	23	0
November	566	68,979	13	0
December	465	50,131	8	0
Total, 1931	3,580	2,450,697	210	7
Total, 1930	320	636,650	132	6
Difference	3,260	1,814,047	78	1

Note—Initial production in 1931 based on gauges ranging all the way from a few minutes up to 24 hours. In 1930 the initial production figures represent estimated first 24-hour production. About 325 oil wells completed in the East Texas area in 1931 but not yet tested, are not recorded in the above tabulation. They will be listed in the January report this year.

NEW YORK EXPORTS SHARPLY LOWER IN 1931

(Continued from Page 105)

France has not attained the expected impetus, due largely to political maneuvering, but this situation shows signs of clearing up, and it is expected the ambitious French refinery program will be well on its way toward completion by the close of 1932. There has been considerable new refinery construction in other parts of the world as well, all of which presages lessened demand for refined products from the United States.

Oil companies with important producing interests in Mexico and South America, it is felt, will not attempt to "buck" domestic oil in the face of an import duty, but will go ahead with the construction of additional refinery construction at points adjacent to producing fields in the Caribbean area.

Kerosene Sales Off

A sharp drop in kerosene exports from New York developed last year, total shipments into foreign channels for the year amounting to but 4,872,000 gallons, compared with 10,184,000 gallons in 1930 and 15,356,200 gallons in 1929.

Naphtha exports likewise registered a very heavy decline, standing at 15,119,000 gallons for 1931, contrasted with 36,797,000 gallons in the preceding year and 55,473,800 gallons in 1929.

Lub oils were similarly affected last year. Total exports from New York were 79,836,000 gallons, against 95,999,000 gallons in 1930 and 92,392,500 gallons in 1929.

Exports of paraffin wax from New York, on the other hand, recorded a sharp advance in 1931, due in some measure to heavy purchases made in the East for the account of the Spanish Petroleum Monopoly. Total export shipments from New York for the year were 87,293,000 pounds, compared with 76,324,000 pounds in the previous year and 81,509,600 pounds in 1929.

Prices Low

Declines in selling prices accompanied falling sales totals throughout the entire refined products list in 1931, and the outlook in this respect continues rather unfavorable for the first quarter of 1932, although more optimistic beliefs are held by export traders for the remainder of the year. While refiners, as a rule, no longer "dump" surplus stocks into export channels at prices ridiculously under those quoted for domestic sales, sharp competition featured export selling operations throughout 1931, and netbacks to the refiners were far from satisfactory in most instances.

OKLAHOMA HELD BACK BY OUTSIDE FACTORS

(Continued from Page 68)

April, 1930, and the production was curtailed from that time. The producing area was extended in February, 1931, a half mile south by Tom Slick Oil Co.'s No. 1 Althoff, NE cor. NW, Section 18 14-4, which started flowing at the rate of 75 bbls. an hour from the Simpson sand at 4,983-97 feet. It was later drilled deeper and increased to 100 bbls. an hour. The field was developed until it had a potential of 41,500 bbls. a day. The allowed production was approximately 3,000 bbls. a day during the last half of the year. The pool has a considerable number of undrilled locations which will be developed as the crude oil is needed.

Wewoka Townsite

During the first half of the year the Wewoka Townsite was the most active area in the Greater Seminole district. The potential increased to 75,250 bbls. a day while the daily allowed production was only 6,000 bbls. a day. The pool was discovered in 1930 and was developed during 1930 and the first part of 1931. The largest well found was the Mid-Kansas Oil & Gas Co.'s No. 2 Davis, NE cor. SE NW, Section 30-8-8, which had a potential of 16,462 bbls. a day. The pool covered approximately 60 acres on which 22 wells were completed, finding production in the Hunton lime, Cromwell sand or the Wilcox sand.

New Pool in Seminole

One new producing area was found in the Greater Seminole district. Only a few wildcat tests were started and the majority of those were dry holes. The producing pool was found in April by R. H. Pierce & Co. and others in their No. 1 Phillips, SW cor. SE, Section 8-9-6, Seminole County. It made 250 bbls. a day after a shot from the Wilcox sand. The second well was completed in the area by the Prairie Oil & Gas Co. and the other offsets increased the potential of the area to 8,270 bbls. a day while the allowable was placed at 3,000 bbls. a day. Many believe the area will develop into a major pool.

Property Sales in 1931

Several important transactions were reported during the year, the first of importance was in the Wewoka Townsite, in Seminole County. A half interest in 402 acres of leases was sold by the Ramsey Petroleum Co. to the Mid-Kansas Oil & Gas Co. in March. The acreage was located in the NW, Section 19-8-8, on which four wells were producing with a potential of 37,880 bbls. a day from the Wilcox sand, and the balance of the acreage was located in Sections 19-8-8 and 24-8-8. The Mid-Kansas Oil & Gas Co. became the sole owner and operator of the property.

The next sale was in May, in the Oklahoma City Field, when the interests of the Century Petroleum Co. were purchased by the Operators Royalty & Pro-

ducing Co. No consideration was announced. The Operators Royalty & Producing Co. took over the operation of the properties. The sale included all the interests in five producing wells in the Oklahoma City Field and two refineries, one located in the Oklahoma City Field with a capacity of 2,000 bbls. a day and the other one in West Tulsa with a capacity of 1,000 bbls. a day.

Another sale announced in May was also in the Oklahoma City Field where Kessler & Co. purchased a one-fifth interest in all the properties of Westgate Oil Co. The consideration was reported to be $600,000. The valuation of the Westgate Oil Co. properties was estimated at $4,000,000 including leases, producing wells, drilling tests and other lease equipment. The property consisted of the Carey lease in the N half SE, Section 34-12-3w, on the north edge of the field, on which one well was completed and two others drilling. Other property included in the transaction were two completed wells and several drilling tests. The properties were all located in the Wilcox sand area of the field.

Another sale in the Oklahoma City Field came in April, when H. H. Patton sold his interests in seven producing properties, the interest going to his partners. The partners acquiring the interests were Wilcox Oil & Gas Co., Anderson & Kerr Drilling Co., Charles Hubbard Drilling Co. and Dabney & Johnson. The interests included seven Wilcox sand wells with a potential of 100,000 bbls. a day and two drilling tests.

OKLAHOMA

Wells Completed in 1931 by Counties

County—	Comp.	Prod.	Dry	Gas
Carter	16	15,597	11	0
Atoka	3	.....	3	0
Creek	132	4,870	51	51
Muskogee	95	305	47	27
Okfuskee	22	211	13	3
Seminole	69	98,168	17	5
Oklahoma	249	1,778,857	8	1
Osage	42	346	24	5
Okmulgee	59	292	28	16
Pottawatomie	23	13,489	8	9
Wagoner	38	90	22	10
Hughes	14	545	5	6
Caddo	2	1,196	1	0
Cleveland	3	75	2	0
Coal	3	.....	2	1
Comanche	4	.....	4	6
Grady	10	.....	1	0
Haskell	11	.....	7	4
Jefferson	6	299	4	0
Kingfisher	1	.....	1	0
Latimer	8	.....	3	5
LeFlore	7	.....	4	4
Lincoln	14	23,122	2	4
Marshall	19	96	14	0
Love	3	.....	3	0
McIntosh	5	.....	3	2
McClain	1	.....	1	0
Pawnee	28	73	17	5
Payne	10	410	4	1
Pittsburg	27	.....	5	22
Pontotoc	15	1,832	3	1
Tulsa	27	597	8	4
Washington	1	.....	1	0
Woodward	1	.....	1	0
Cotton	3	15	2	0
Harmon	1	.....	1	0
Bryan	2	.....	2	0
Cherokee	1	.....	1	0
Texas	3	.....	0	3
Noble	8	.....	5	3
Beckham	2	.....	1	1
Garfield	4	100	2	1
Harper	1	.....	1	0
Kay	4	.....	3	1
Garvin	1	.....	1	0
Kiowa	3	.....	3	0
Murray	1	.....	1	0
Rogers	1	.....	1	0
Johnston	1	.....	1	0
Stephens	7	75	3	2
Sequoyah	1	.....	1	0
Total	1,058	1,941,805	374	186

Summary by Months

January	198	540,133	76	23
February	106	267,210	22	19
March	102	174,012	36	13
April	139	217,891	46	26
May	65	54,742	36	12
June	104	176,910	31	24
July	79	124,179	32	14
August	39	50,877	10	10
September	61	93,427	27	12
October	57	144,241	23	11
November	54	32,321	19	9
December	54	64,962	16	13
Total 1931	1,058	1,941,805	374	186
Total 1930	3,466	5,628,234	1,092	403
Difference	2,408	3,686,429	628	217
Total 1929	3,613	1,178,945	1,245	369
Total 1928	3,679	1,016,000	1,227	491
Total 1927	4,513	1,971,081	1,443	508

CALIFORNIA SHIPPED LESS GASOLINE EAST

(Continued from Page 105)

fornia the figures given represent the total inventory of finished gasoline and engine distillate held by reporting companies wherever located within continental United States (stocks at refineries, marine terminals, and all distributing stations, including products in transit thereto).

There was a moderate movement of California gas oil and distillates to East Coast markets during 1931, but these shipments at no time ran into sufficiently heavy totals to disturb eastern markets for these products.

CALIFORNIA GASOLINE SHIPMENTS TO ATLANTIC AND GULF COAST PORTS

(Barrels of 42 Gallons)

Week ended—	1931	1930	1929
Jan. 3	388,000	83,000	239,000
Jan. 10	646,000	447,000	397,000
Jan. 17	334,000	575,000	418,000
Jan. 24	154,000	535,000	294,000
Jan. 31	488,000	398,000	68,000
Feb. 7	267,000	379,000	554,000
Feb. 14	165,000	612,000	445,000
Feb. 21	311,000	117,000	80,000
Feb. 28	198,000	105,000	517,000
Mar. 7	390,000	178,000	287,000
Mar. 14	388,000	470,000	225,000
Mar. 21	220,000	360,000	667,000
Mar. 28	454,000	439,000	536,000
Apr. 4	487,000	197,000	242,000
Apr. 11	192,000	176,000	172,000
Apr. 18	196,000	195,000	355,000
Apr. 25	496,000	393,000	408,000
May 2	295,000	372,000	362,000
May 9	212,000	263,000	374,000
May 16	544,000	455,000	537,000
May 23	306,000	387,000	414,000
May 30	142,000	186,000	312,000
June 6	438,000	274,000	161,000
June 13	179,000	368,000	387,000
June 20	173,000	445,000	595,000
June 27	148,000	386,000	381,000
July 4	301,000	699,000	610,000
July 11	496,000	451,000	382,000
July 18	313,000	1,089,000	159,000
July 25	97,000	443,000	328,000
Aug. 1	530,000	686,000	821,000
Aug. 8	30,000	506,000	349,000
Aug. 15	115,000	399,000	259,000
Aug. 22	279,000	423,000	412,000
Aug. 29	409,000	512,000	529,000
Sept. 5	35,000	602,000	260,000
Sept. 12	208,000	368,000	395,000
Sept. 19	246,000	216,000	690,000
Sept. 26	136,000	498,000	217,000
Oct. 3	302,000	207,000	233,000
Oct. 10	332,000	308,000	441,000
Oct. 17	551,000	542,000	623,000
Oct. 24	146,000	475,000	503,000
Oct. 31	97,000	81,000	341,000
Nov. 7	357,000	606,000	712,000
Nov. 14	222,000	166,000	443,000
Nov. 21	.....	544,000	440,000
Nov. 28	333,000	347,000	498,000
Dec. 5	202,000	405,000	685,000
Dec. 12	303,000	348,000	349,000
Dec. 19	114,000	115,000	552,000
Dec. 26	170,000	64,000	599,000

MT. PLEASANT EXTENSION HIGH SPOT IN MICHIGAN

(Continued from Page 73)

24,000 bbls. on January 1, 1932, in Mount Pleasant. The Muskegon Field dropped during the same period from 2,000 bbls. to about 700 bbls. a day.

Several wells with an initial daily flow of 2,500 bbls. or more, one of which was rated at more than 200 bbls. an hour, or about 5,000 bbls. a day, and others ranging from 1,000 bbls. upward were brought in near Mount Pleasant, as the most important developments of the year. Prior to 1931 only two wells had exceeded 1,000 bbls. and they made only 1,500 bbls. a day.

Good Gassers

New large gas wells also brought in at Mount Pleasant had an open flow capacity of from 2,000,000 to 10,000,000 cubic feet a day. The largest gasser ever struck in the central state area had an initial open flow of 16,000,000 cubic feet but dropped to about 10,000,000 when gauged after having flowed open for 38 hours. It was the No. 8 James A. McKay on the James E. Bicknell farm in Section 6, Grant Township, Clare County, completed during the closing weeks of the year.

Proved acreage of the Mount Pleasant area was increased to about 15,000, including 10,000 acres of oil and 5,250 acres of gas producing lands.

When the year closed there were about 222 oil and 22 natural gas wells in the Mount Pleasant area. This was an increase of 40 over a total of 204 producers recorded on January 1, 1931.

The most important new development in the state was the east extension and new east pool in the Mount Pleasant area near the original Isabella-Midland County, Mount Pleasant, Field.

The old field was extended about 1½ miles east along the M-20 state trunk line in April when the Kalamazoo Improvement Co. brought in No. 1 George Hornick, SW NW SW Section 15-14n-2w, Greendale Township, Midland County. It was an initial 1,000-bbl. producer in the Dundee formation.

Several offsets were started and soon completed. Then Walter L. McClanahan, generally known as "Hard Luck" McClanahan, made location for his ill-fated No. 1 A. J. Struble well, SW SE Section 10-14n-2w, Greendale Township, Midland County, another 1½ miles east of the old field.

Disastrous Oil Fire

One of the most disastrous oil fires in Michigan occurred when this well roared in early in July good for a daily flow of more than 1,000 bbls. in the Dundee formation.

Since its completion a total of nearly 20 oil producers have been brought in in what is called the "east pool." They have a daily average potential open flow of about 1,000 bbls. each and an aggregate of three times as much as the old original field now making about 3,500 bbls. a day.

Several large new wells, including one 2,500-bbl. oil producer, also were completed in the Vernon Township Pool. The largest was George Talbot and others' No. 1 George Woods, S half S half NW Section 22-16n-4w, Vernon Township, Isabella County. It flowed at the rate of 104 bbls. an hour for the first 18 hours and was rated at about 2,500 bbls. a day in the Dundee. Pay sands were struck comparatively low and the well is 3,775 feet deep. Previously completed wells in this area ranged from 250 to 500 bbls. a day initial. It also was the first big well of the year for the entire Mount Pleasant area.

The Talbot-Woods well was brought in during August and was followed toward the latter part of September by the Pure Oil Co.'s No. 1 Purtell, in Section 15, Greendale Township, which had a similarly high initial daily capacity of 2,500 bbls.

The third and new record well of the year was the Pure Oil Co.'s No. 1 Bernard, located in Section 9, Greendale Township. It made 3,600 bbls. the first 24 hours from the Dundee sand and was followed by the Pure-Noah Skinner well which made 2,400 bbls. initial early in October.

McClanahan's No. 2 A. J. Struble, on the same lease as the well with which the east pool was opened, came in as an initial 3,300-bbl. oil producer about November 1.

Record-Breaking Well

McClanahan also brought in the field's record producer of the year, and of all years in Michigan oil history, when his No. 1 Morrison, SW SE Section 10-14n-2w, Greendale Township, Midland County, came in making more than 200 bbls. an hour, or 5,000 bbls. a day. It made only 40 bbls. an hour at first, but increased five-fold when drilled into the second Dundee pay streak.

Since the development of the east pool into the leading producing area in the Mount Pleasant region, two further east extensions have been drilled increasing the proved acreage considerably but not adding any large production themselves. The Strange-Weller No. 1 Rheimenschneider, located in Section 14-14n-2w, Greendale Township, came in as a 200-bbl. producer topping the Dundee at 3,495 feet, the pay sands at 3,555 feet and a completed depth at 3,567 feet.

What is believed to be the east edge of the pool was located by the drilling of the L. G. Thompson No. 1 Hewitt, in Section 18, Lee Township, 2½ miles east of the No. 1 Struble well and 5 miles east of the original field. It made about 70 bbls. a day after being drilled into bottom water and plugged back.

Two semiwildcats located southeast of the east pool and northwest of the Vernon Township proved area, respectively, were dry, limiting development in these directions. They were the McClanahan No. 1 Solms, N half NE Section 26-14n-2w, Greendale Township, Midland County, and the Old Dutch Refining Co.'s No. 1 Ben Loomis, SW SW SE Section 16-16n-4w, Vernon Township, Isabella County. The former was dry at 3,520 feet and the latter at 3,824 feet.

An important wildcat that was completed about 10 miles southeast of the east pool in September, 1931, was the Pacific Oil & Gas Co.'s No. 1 Ottaway, located in Section 26 of Porter Township, Midland County. Dundee was topped at 3,417 feet and the well is good for 50 to 75 bbls. a day at a total depth of 3,467 feet, or 50 feet in the pay sands. Several offsets were drilling as the new year opened.

Three important new gassers were completed during the year in the Broomfield Township gas pool, two on the Pure Oil Co.'s Willie lease and the other on the A. R. Skerritt farm, the first two in Section 4 and the other in Section 5. They increased the potential open flow of the area from 30,000,000 to about 45,000,000 cubic feet a day from 12 wells.

Two large gassers were added in the Clare County Field, being developed by the James A. McKay and Mercier interests, of Detroit. Both were on the James E. Bicknell property in Section 6, Grant Township, Clare County. The first made 4,500,000 cubic feet a day and the second was gauged at 9,000,000 cubic feet after blowing open for 38 hours. It was originally announced as a 16,000,000 cubic-foot well.

These two wells increased the number in the Clare County pool to six with an aggregate open flow capacity of about 20,000,000 cubic feet a day. The Vernon Township gassers have an aggregate open flow of about 16,000,000 cubic feet a day.

Several new gassers making from 500,000 to 2,000,000 cubic feet a day were completed in Gratiot County near Ashley.

MICHIGAN FIELDS

Summary of Wells Completed in 1931

Month—	Comp.	Prod.	Dry	Gas	Oil
January	6	600	2	1	3
February	14	813	9	1	3
March	5	133	1	2	2
April	8	490	2	3	3
May	9	601	6	1	2
June	6	265	2	2	2
July	7	2,150	2	3	2
August	6	2,720	1	2	3
September	20	6,700	8	6	6
October	15	9,550	4	6	5
November	13	11,975	2	2	9
December	18	2,950	9	1	8
Total 1931	127	38,947	48	30	48

Summary by Counties

County—	Comp.	Prod.	Dry	Gas	Oil
Muskegon	4	0	3	1	0
Isabella	34	9,663	9	7	18
Midland	32	29,260	4	0	28
Oceana	1	30	0	0	1
Mason	1	0	1	0	0
Newyago	2	0	2	0	0
Clare	5	0	3	2	0
Missaukee	2	0	0	2	0
Monroe	4	4	0	2	1
Washtenaw	4	0	3	1	0
Gratiot	7	0	1	6	0
Livingston	1	0	1	0	0
Allegan	6	0	6	0	0
Mecosta	2	0	2	0	0
Ogemaw	1	0	1	0	0
Wexford	1	0	1	0	0
Lenawee	2	0	1	1	0
Wayne	18	0	10	8	0
Total 1931	127	38,947	48	30	48

ATLANTIC COAST PRICES WERE LOWER IN 1931

(Continued from Page 106)

been one of the constructive features of the market.

Barring any pronounced reductions in crude oil prices during 1932, East Coast refiners are optimistic regarding the possibility of a steady market for industrial oils during the current year.

Cylinder Oils

Considerable activity has featured the cylinder oil market during the past year. Markets were unsettled and trending downward during the first half of the year, but reacting to a sharp cut in production, prices stiffened during the third quarter, the advances carrying over into the early part of the closing quarter of 1931. Increasing production followed by sharper selling competition, manifested themselves during the closing two months of the year, however, and this, coupled with a declining demand on the part of both domestic and export buyers, undermined the market position and brought about a sustained downward price movement which apparently had not ended as the year closed.

TEMPORARY LULL IN SOUTHWEST TEXAS

(Continued from Page 84)

390 feet from the west line and 5,267 feet from south line of Portillo Survey, at 7,634 feet for 50,000,000 feet of gas. Two other producers have been drilled on the lease block by the Welder Oil Corp. and made about the same size wells. The discovery well was brought in April 29, 1931.

Other than this new field, which has not since been developed to any extent, the drilling in San Patricio County on the north side of Nueces Bay in the White Point Field and in the Saxet Field on the south side in Nueces County has met with only moderate success though it has opened up new sands.

Pettus Pool in Bee County

The Pettus Pool in Bee County was extended east and west during the year. The limit of the field on the east was found with the United Production Co.'s No. 38 Ray, which was dry and abandoned at 3,979 feet. It was located 900 feet east, 10 degrees south of No. 35, which is the last producer on the east. Location of No. 35 is 3,253 feet southeast along the southwest line of the Thomas Hanson Survey from the southwest corner of the survey and 1,567 feet northeast at right angles to the southwest line of the survey. This No. 38 Ray dry hole is between the field on the west and the company's No. 3 Ray, a mile and a half east, a solitary small oil well at 4,060 feet.

One other event worth noting in the east end of the field is the United Production Co.'s No. 39 Ray, 1,130 feet southeast from the southwest corner of the Thomas Hanson Survey along the southwest line and 2,396 feet northeast at right angles to it. The test is notable for the reason that it went to 7,642 feet without finding anything in the deeper sands and plugged back to 3,910 feet and was completed as a 75-bbl. oil well.

J. M. Davis extended the field to the southwest from Pettus townsite by bringing in No. 1 Ray in the northeast corner of the John W. Williamson Survey. The interests owning the well afterward incorporated as the Damac Oil Co. The test is 330 feet from the north line and 419 feet from the east line of the John W. Williamson Survey and about a mile southwest of production in the townsite, but at somewhat different depth and with dry holes between it and the field indicating a cross fault. With an elevation of 327 feet it topped the sand at 3,920 feet and drilled to 3,925 feet and was completed for about 1,000 bbls. a day initial production. Top of the Jackson was at 2,792 feet.

The Damac test was completed in July and development has not been hurried since but Buck Oil Corp. drilled its No. 1 Ray 3,154 feet from the east line and 150 feet from the north line of the same survey and with total depth 3,898 feet after plugging back 10 feet and it is a 300-bbl. well. The Texas Company, two locations west and one north, has completed a 2,000-bbl. well and these tests have started the drilling of offsets. The only fly in the ointment is H. H. Weinert's No. 1 Ray, midway between the Damac and Buck Oil Corp., which tests a dry hole down to 4,500 feet.

During the year the United Production Co. by drilling two tests midway between the townsite pool on the west and the Ray-McKinney on the east demonstrated that the sand extends all the way across. No further drilling followed. The company in extending the field to the east, as mentioned above, and finding the limits of the field on the east with the No. 38 Ray which was dry, drilled a single line of tests, hence a glance at the map shows there is proven territory enough to drill three or four times as many producers in the Pettus district as there are at present.

New Production Found

Cole Petroleum Co. drilled No. 7 Benavides, 360 feet from the northeast line and 660 feet from the northwest line of Block 8, Section 19, of the Cole Subdivision of the Mariana Arispe grant in southwestern Duval County, in the east edge of the Cole gas field, and got a 100-bbl. oil well at 1,736 feet, in the regular gas sand. Two other oil wells have been completed in the same area and one dry hole farther to the east and a fifth test is now being drilled to the north. The dry hole found the east edge for that sand, but found the sand 171 feet thick. The extent of the oil producing area is not yet established in other directions.

At the south end of the Cole Field, in what is known as the O'Hern-Seacord Pool, Magnolia found a new sand at 2,455-65 feet in its No. 1 W. Benavides, 330 feet from the north and west lines of Survey No. 172, gauging 35,000,000 feet of gas, and Southern Gas Utilities offset it on the west with the sand at 2,433-51 feet and good for about the same volume of gas, but no further development has been attempted.

In northwestern Jim Wells County, Carsil Oil & Gas Co. opened a new gas pool. The company's No. 1 McGill got the gas sand at 2,685-90 feet and ran wild and it was necessary to plug and abandon it. The well was located 1,665 feet from the west line and 654 feet from the south line of the D. Baldwin Survey. No. 2 was drilled 900 feet due north and came in dry. No. 3 was drilled 450 feet south and 300 feet east of the No. 1 and looked dry at first and got the formation somewhat deeper at 2,770-2,804 feet, but after being shot, first with a light shot and later with a heavier one, the production developed to around 12,000,000 to 15,000,000 feet of gas. The formation was found tighter on the east and north and it is anticipated that the sand body lies to the west.

One of the most important discoveries of the year was the John F. Camp extension of the Darst Creek Field in Guadalupe. His No. 1 Sue Denman, 450 feet north of the highway and 150 feet from the east line of the lease, in the William Arrington Survey, a mile southwest of the pool, came in at 2,507 feet for an initial production of over 8,000 bbls. of oil free from water. Later, his No. 1 Dan Denman extended the production another 2,000 feet to the southwest, coming in at 2,403 feet for an initial of 1,380 bbls. Humble offset the No. 1 Sue Denman on the east and south with producers, but on the east of the No. 1 Dan Denman got sulphur water in the Edwards, and the field stood thus at the close of the year.

Mount Lucas Field

The Cartwright or Mount Lucas Field in southeastern Live Oak County came into prominence the past year when the Houston Oil Co., which owns the entire field, started a deep drilling campaign. Though it has been fruitful of results and has found two new sands, the new sands have not been prolific producers. The No. 1-B Boothe, drilled north of the field, which has been producing gas for several years at around 2,150 feet, came in at 5,277 feet for 65 bbls. of oil a day. It is 70 feet south and 200 feet east of the No. 1 Boothe, which was lost, and the No. 1 Boothe was located 3,000 feet from the west line and 300 feet from the south line of the Boothe 822-acre tract in the M. B. Kilvin Survey.

Houston Oil Co. later drilled the No. 23 Cartwright, in the northwestern part of the field, to 3,565 feet and got a 100-bbl. well. Several deep tests have been drilled around over the field but these are the only tests that found production.

In the Laredo district one deep test attracted consideration attention because of it being the deepest hole drilled in the district. It is Humble Oil & Refining Co.'s No. 50 Kohler, 2,805 feet from the south line and 165 feet from the west line of Survey 164 in the Kohler Field, where gas and oil are producing at an average of 1,700 to 1,800 feet. No. 50 Kohler went to 7,725 feet and was abandoned.

Deep Drilling

There has been a tendency in recent years in Southwest Texas, where it is known that sedimentary formations extend much deeper than it is possible to go with present methods, to drill deeper, but in 1931 the sum of nearly two dozen tests carried to 5,000 feet or more resulted in only two small wells, each by the Houston Oil Co., and one of these a producer only after it had plugged back. This was the No. 1-B Ollie Purl in the Agua Dulce Field in western Nueces, which went to 6,010 feet and plugged back to 4,848 feet, where it made a 40,000,000-foot gas well. The other was the Houston Oil Co.'s No. 1-B Boothe, in the north edge of the Cartwright Field in southeastern Live Oak County, which drilled to 5,277 feet, where it made a 65-bbl. oil well.

The other deep tests, if at all were profitable only in furnishing additional geological knowledge.

Offsetting the Houston Oil Co.'s No. 1-B Boothe in the Cartwright Field are four other tests the company drilled in that field where gas production is had at 2,150 feet. The No. 22 Cartwright was drilled to 6,023 feet and abandoned dry, No. 3 Brown Land & Cattle Co. to 5,576 feet, No. 4 Brown Land & Cattle Co. to 5,724 feet, and No. 1 D. W. Snyder to 5,386 feet, all of them dry.

The deepest test during the year was the Humble Oil & Refining Co.'s No. 50 Kohler in the Kohler Field in Duval County, abandoned at 7,725 feet. Two other tests went below 7,000 feet. Rycade Oil Corp.'s No. 5 Sullivan, in Maverick County, 3,000 feet from the east line and 1,260 feet from the south line of Section 82, Block 7, I.&G.N. Railroad Survey, was spudded in early in February, 1930, and completed early in February, 1931, at 7,449 feet, dry. In the Pettus Field, United Production Co. drilled the No. 39 Ray to 7,642 feet and was dry at that depth but made a well at 3,910 feet.

SOUTHWEST TEXAS

Summary of Completions for the Year 1931

Pool—	Comp.	Prod.	Dry	Gas
Agua Dulce	1	0	0	1
Bruner	0	0	0	0
Cartwright	6	565	3	0
Chittim	2	0	1	1
Chapman	30	3,899	6	1
Camp	3	7,290	0	0
Cooksey	1	0	1	0
Darst Creek	27	28,250	2	0
Dobrowolski	17	84	8	1
Eddington	1	10	0	0
Lasater	1	0	1	0
Luling	0	0	0	0
McFadden	4	0	0	4
Mirando	169	18,281	66	22
Pettus	18	3,619	8	2
Pryor	2	0	0	2
Saxet	12	693	1	3
Somerset	0	0	0	0
Slick	1	100	0	0
Schimmel	2	264	1	0
S. R. C.	1	200	0	0
Three Rivers	1	0	1	0
Unit	1	20	0	0
Walsh	1	0	0	1
Welder	3	40	1	2
White Point	3	40	2	0
Miscellaneous	317	1,799	278	11
Total, 1931	624	65,114	380	51

Completions by the Month

	Comp.	Prod.	Dry	Gas
January	51	9,176	27	6
February	72	6,050	34	10
March	56	5,187	20	3
April	89	8,941	62	5
May	65	1,852	46	6
June	46	2,166	34	1
July	33	709	28	2
August	36	592	24	3
September	32	8,638	24	1
October	29	5,424	16	2
November	57	10,225	36	7
December	58	6,154	29	5
Total, 1931	624	65,114	380	51
Total, 1930	1,193	430,393	512	95
Difference	569	365,279	132	44

CANADA'S OIL OUTPUT IN 1931 KEPT DOWN

(Continued from Page 93)

a good gas production in its No. 1 well, three subsequent tests failing to get production. In 1931 five more wells were drilled, one being a good gasser with 2,225,000 feet shot production, one a small gasser and three dry holes. Production is encountered around 1,550 feet. No new drilling has been done recently.

The Union Gas Co.'s drilling of its proven field in Dawns Township, Lambton County, in 1931 showed good results. Seven new wells were drilled and two old wells deepened; and though six were dry holes, the three remaining wells finished with a reported aggregate production of 21,500,000 feet. North of this field, Sarnia Oil & Gas Co. has been doing some deep drilling on acreage of the Oil Springs Oil & Gas Co. near Oil Springs; one test finished around 1,900 feet with a shot production estimated at 1,000,000 feet a day, and another is to be carried to the Trenton limestone.

A new gas area was opened this year in the central section of Raleigh Township, Kent County. A test by Union Gas Co. on acreage of the Olga Oil & Gas Co. got a fair shot production, 582,000 feet, from a sand below 1,500 feet, and the Olga company has continued drilling, securing two producing wells and one dry hole, while a fifth test is under way.

Western Canada

Commercial production in the Canadian west is still limited to the province of Alberta, though there has been some wildcatting in the other provinces. The Turner Valley Field southwest of Calgary still provides the major oil production. Comparative figures of pipe line runs for 1931 and 1930 are as follows:

Month—	Barrels 1931	Barrels 1930
January	156,658	88,975
February	132,267	78,319
March	128,975	105,835
April	114,217	87,278
May	118,614	84,046
June	113,429	111,960
July	90,258	95,884
August	66,794	110,801
September	66,496	112,563
October	66,522	144,022
November	69,082	132,787
December	73,022	160,725
Total	1,199,334	1,312,695

Pipe line runs represent, however, merely the deliveries to the Calgary refineries. Considerable additional crude naphtha is sold at the wells direct to consumers, such sales being obligatory under Alberta legislation. As a result, figures of Alberta production issued by the provincial mines department show a larger production from the Turner Valley Field. The complete provincial figures for the entire year 1931 are not yet available, but with official figures for the 11 months ending November 30 and careful estimates for December, the totals for the various Alberta pools will compare as follows:

Pool—	1931	1930
Turner Valley naphtha	1,338,180	1,314,039
Turner valley light crude	27,146	50,545
Red Coulee light crude	64,998	53,917
Wainwright heavy crude	7,003	9,739
Ribstone heavy crude	10,577	1,873
Skiff heavy crude	.....	3,731
Total	1,447,904	1,433,844

The Turner Valley Field thus shows an increased production for 1931. But the increase was all in the first half of the year, as is revealed by the monthly figures of pipe line runs; the subsequent marked decline being due to government conservation measures.

Turner Valley Field

Operations in the Turner Valley were markedly affected by these conservation measures. Conservation was undertaken by the Alberta government primarily to protect the natural gas reserves. From the time the first deep lime producer was drilled in 1924, an increasing number of wells were allowed to blow wide open, the operators merely extracting the crude naphtha by separators and burning the residual gas for which there was no market. Royalite Oil Co. through its contract with the Canadian Western Natural Gas, Light, Heat & Power Co. was able to market its residual gas production to Calgary, and latterly this city has been almost entirely supplied from the Turner Valley Field. But with an open flow estimated as high as 400,000,000 to 500,000,000 feet a day, Calgary, even under peak load conditions, was able to take only about one-tenth of the residual gas.

Evidence produced at a gas rate hearing in May was taken by the government to indicate, first, that Turner Valley should be treated primarily as a gas field; and, second, that unless conservation measures were taken the field would cease to exist within a few years. Accordingly, the government adopted a series of increasingly drastic restrictions on the operation of the field. The first measure was to restrict the deep lime wells to approximately 40 per cent of

TIME

TIME is a vital factor in any Natural Gas development. Investment begins with the first stroke of work done; it grows greater as the days pass. But earnings begin only when the system is complete and operative. Time consumed in organizing, constructing and equipping, is idle time so far as the invested capital is concerned.

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HOPE

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their normal open flow. A committee on conservation was secured to investigate the situation, and the maximum aggregate open flow was set at the still lower figure of 100,000,000 feet a day to be prorated among the producing wells. At about the same time, Imperial Oil, Ltd., owing to decreased gasoline consumption in the West, limited monthly crude naphtha deliveries to its plant to 50 per cent of June deliveries. The result of these various measures was the marked decline in crude naphtha deliveries shown by the figures for the concluding six months of 1931.

Efforts were made through a subcommittee on conservation to work out a plan of unit operation of the field, under which crude naphtha production would be pooled, the independent operators would share in gas revenue, and the proceeds of such operation would be equitably divided among the companies. This proposal was rejected by Imperial Oil, Ltd., and was unacceptable to a number of the independents. On December 1 the government by order-in-council prohibited the drilling of any new wells into the lime. Intimation has been given that at the approaching session of the legislature further measures with a view to conservation will be instituted by the government.

In addition to restricted production and restricted deliveries, the producers have been affected by lower prices. In the earlier part of the year, however, a number of Turner Valley companies were able to pay some dividends from revenues gradually accumulated from the sale of production.

Result of Year's Drilling

In 1931, activity again was greatest in the South Turner Valley area, and there the best results were secured. The year was marked by the proving of a considerable extension of the field to the south, the first large production in Township 18-2w5 being secured by Merland Oil Co. Merland's No. 1 in Section 27, completed by Imperial Oil, Ltd., has a flush production reported around 400 bbls. Toward the close of the year Sterling Pacific Oil Co.'s No. 2, Section 33, came in a big producer with 20,000,000 feet of wet gas and estimated naphtha recovery of more than 250 bbls. a day.

Field East of Coutts

A new gas field of considerable importance was opened east of Coutts by Mayland Southern's No. 1, in Section 4-1-9w4, on the Alberta end of the Reserve Dome. This test got gas flows aggregating at least 10,000,000 feet in three different sands, and in the spring will drill still deeper for oil.

Two other tests showed distinct promise of commercial oil production. In the Keho Lake area, Hudson's Bay Oil & Gas Co.'s No. 1 Keho, Section 17-11-22w4, got a small commercial production of high-grade crude in the Benton shale, and, deepening, encountered good showings in the top of the Madison lime at 4,920 feet. On the Twin River structure, Parco Oil Co.'s No. 1, Section 34-1-20w4, got crude shows, bailing at the rate of 125 bbls. a day from the top of the Madison, and is preparing to test production. These two related tests indicate strong possibilities in the Madison lime over a large section of the border area, and the possibilities are being further tested by Texas-Imperial's No. 1 on the Lethbridge structure, Section 22-8-22w4, now drilling close to the Madison.

Natural Gas Development

In addition to the production developed by Mayland Southern's No. 1 in the border area, the Medicine Hat gas field was materially extended in 1931 by the drilling of two large producing wells several miles northeast of the proven field. These wells are among the largest yet drilled in the municipally-owned field, and indicate a new gas reserve of considerable importance.

In east central Alberta, Northwestern Utilities, Ltd., drilled two additional producers in the Viking Field, and in southern Alberta, Canadian Western Natural Gas Co. drilled one small gasser and is starting a second test, at Brooks.

GULF CONSTRUCTING BEAUTIFUL NEW STRUCTURE IN PITTSBURGH

The new building of the Gulf Oil Corp. in Pittsburgh, when completed, will be one of the most beautiful office buildings in the world. The whole ground area, intended to be occupied, will be covered by only the first four stories. The fifth and sixth stories will run up straight on the Seventh Avenue and the north sides, but will be stepped back from Grant Street and William Penn Place. These six stories form the base of the building, out of which will rise a majestic tower, approximately 108 feet square, running up straight for a distance of 304 feet to the thirty-first story. At this point the tower will be stepped back slightly for architectural effect and continue up for an additional distance of 83 feet to the top of the parapet wall at the thirty-seventh story. It will then be capped by a stepped pyramid top ending in a cupola or lantern. The total height of the tip of a cupola or lantern will be approximately 575 feet above the average curb grade. On all four sides, the base course will be of granite and the rest of the eexterior of Indiana limestone.

Between the outside face of the first step of the pyramid top and the parapet wall above the thirty-seventh story, there will be a promenade around the four sides of the building from which an excellent view in any direction can be obtained.

The lobby and corridors on the first floor will be finished entirely with marble. All stories above will have marble floors and marble wainscoting.

The building will be served by fourteen elevators divided into banks.

When the building is completed, the Gulf Oil Corp. will again be able to house the general offices of its subsidiary companies under one roof. Due to the growth of these companies in recent years, their offices are at present scattered through five downtown office buildings in Pittsburgh. It is estimated that the Gulf companies will occupy about one-half of the office space immediately upon completion.

The three main buildings shown in the picture are, left to right, the Koppers Building, the new Gulf Building and the new Pittsburgh Federal Reserve Building.

COLOMBIA CRUDE PRODUCTION

CHATHAM, Ontario, Jan. 25.—Preliminary estimates of crude oil production from the Colombian fields for 1931 indicate a total of approximately 16,790,000 bbls., or an average of 46,000 bbls. a day. This represents a decline of 16 per cent from the 1930 output which was 20,075,000 bbls., or 55,000 bbls. daily average.

The reduction was entirely due to curtailment and conservation measures put into effect by the International Petroleum Co., which through its subsidiary, the Tropical Oil Co., controls the greater part of the Colombia production. The company is stated to have sufficient production developed to yield an output far in excess of that for 1930. Both shipments of crude, and consumption of refined products in Colombia, showed a decline parallel to that in production.

JOSEPH M. LOGUE DEAD

Joseph M. Logue, age 48 years, died in Eldorado, Kans., Saturday, January 16, after a 10 days' illness. Mr. Logue had been district superintendent for the Magnolia Petroleum Co. in the Butler County fields for over 13 years and previously had served the Magnolia in Oklahoma fields. He is survived by Mrs. Logue and three sons, Joseph, Richard and George, all of Eldorado; and two sisters, Mrs. W. J. Matych of Tulsa, and Mrs. E. C. Byers of Burkburnett, Tex.

WILBUR WRITES BOOK URGING OIL COMPACT

With this country having one-fifth of the world's oil resources, but furnishing two-thirds of the world's output, and with a "record of all time for a waste of wealth having been broken in the past decade in the oil fields of the United States," oil production should be regulated by states through the adoption of an interstate compact providing for the allocation of output, Ray Lyman Wilbur, Secretary of the Interior, and William Atherton Du Puy, executive assistant, recommend in their jointly written book entitled "Conservation in the Department of the Interior."

The publication of the book as a public document by the Government Printing Office was announced January 3 by the department. The oil industry is said in the announcement to have been "a scramble, a madness."

The book emphasizes oil as constituting one of the government's vital problems in conservation. Heretofore, it states, oil has been produced too rapidly and too wastefully. The United States with one-fifth of the oil of the world is yielding two-thirds of the world output.

The record of all time for a waste of wealth has been broken in the past decade in the oil fields of the United States, the book says, "In California alone, it is estimated, the loss in natural gas alone has been sufficient to have paid the national debt. The oil industry, in fact, has been at sevens and sixes. It has been a scramble, a madness. But there is a way out."

"The states should exert their authority to regulate oil production," the book holds, "they should themselves be responsible for holding production down to the point which would prevent waste. Working out this detail of control logically would lead toward unit operation and practical conservation.

"In June, 1929, a conference on oil production was held in Colorado Springs and the government's position was expressed in a statement which said that primarily, the responsibility for the handling of this oil problem lies with the industry and with the governments of the states. The position of the federal government is not to interfere with the rights and duties of the local state governments but to lend such aid as it can and to participate in the solution of the problems.

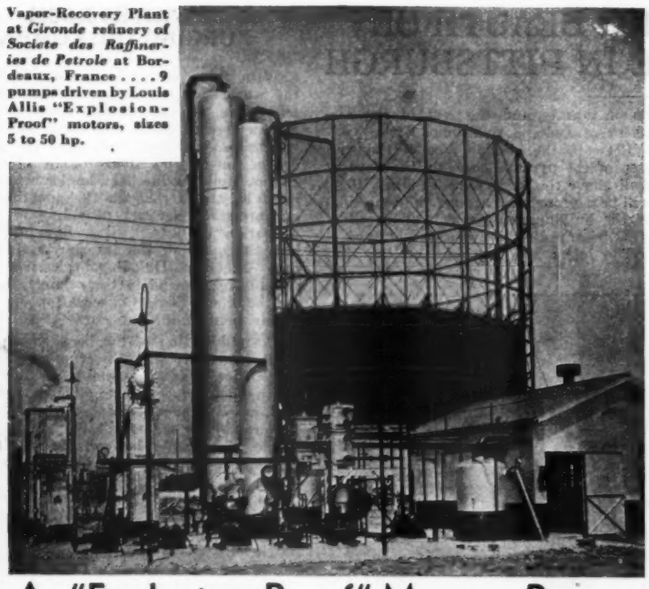
"This administration has no desire to concentrate the forces of government in Washington. It has every desire to cooperate with the states. The aims sought are uniformity of the conservation legislation and the uniformity of enforcement by some body, such as a joint commission. This could be created by a simple compact of the states ratified by congress.

"The industry was not at that time ready to come to this view of the problem. The possibilities that lay in action by the states were not then generally appreciated. When two years had passed, however, state action was admittedly the proper course in solving the problems of oil production, and strenuous action was being taken at many points."

CHILE CONSIDERS OIL MONOPOLY

American companies marketing in Chile are closely interested in a movement under way in that country for a government monopoly on the sale of petroleum products. Such a movement has been mentioned at various times during the past few years, but it has now reached the point where the Chilean house has passed a refinery bill authorizing the government to grant a single concessionaire a monopoly on both refining and sales throughout Chile for a period of 17 years.

Shell-Mex and International Petroleum Co., subsidiary of Standard Oil Co. of New Jersey, are both prominent in refined products marketing in Chile, while various California refiners have been selling considerable quantities of fuel oil to the nitrate and copper companies operating large plants in Chile.



Vapor-Recovery Plant at *Gironde* refinery of *Societe des Raffineries de Petrole* at Bordeaux, France . . . . 9 pumps driven by Louis Allis "Explosion-Proof" motors, sizes 5 to 50 hp.

L. A. "Explosion-Proof" Motors *Protect* New Refinery at Bordeaux

Safety to Man and Property was considered as important as Performance in building this modern vapor-recovery plant. And the designing engineers realized the serious fire hazard incurred when ordinary motors are operated in explosive atmospheres. They avoided this hazard by selecting Louis Allis "Explosion-Proof" motors for the charging, gasoline reflux, and hot oil pumps.

So throughout the oil industry. L.A. "Explosion-Proof" motors and starters . . . the *first* practical devices of their kind . . . now are *protecting* hundreds of refineries, natural gasoline plants, and bulk plants . . . in America, France, Roumania, Russia, and other countries all over the world.

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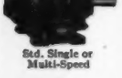

Wound-Rotor

Vertical

Direct Current

Hoist Type

SINCE 1901 STANDARD AND CUSTOM BUILT MOTORS

THE LOUIS ALLIS CO. MILWAUKEE, WIS.

FROG PUDDLE LAWSUIT IS FINALLY DECIDED

WICHITA, Kans., Jan. 25.—Oxford's "frog puddle" lawsuit terminated at Denver in favor of Elmer Corn and associates, oil operators, of Wichita, when the U. S. Circuit Court of Appeals ruled against the Shell Petroleum Corp. in an action involving nearly $200,000 lease.

The "frog puddle" was 2.7 acres in size, consisting of part of the Midland Valley right of way where the line crosses the Gulf Coast branch of the Santa Fe overhead, the land having been owned by the late J. M. Buffington.

Corn and associates drilled in a well on the tract almost five years ago. The wells subsequently produced almost $200,000 worth of oil. The Shell brought suit on the ground that it had leased the entire Oxford townsite, but it was the contention of Corn and others that the small tract was an exception.

The case originally was tried in Sedgwick County district court, was transferred to the federal district court, both of which ruled in favor of Corn; was appealed to the appellate court, which remanded it to federal court here for retrial. Judge W. F. Lilleston of Wichita was appointed special commissioner by federal Judge John C. Pollock to handle the case, and it was his decision in favor of Corn which Shell appealed involving the decision handed down at Denver.

Two wells were drilled on the tract in 1927, one making 1,600 bbls. and the other 1,200. They produced for about two and one-half years. Because the tract was situated on low, muddy ground at the bottom of a heavy fill beside the Santa Fe line, it was called the frog pond lease.

Elmer Corn owned 40 per cent of the production. Interested with him was George Bruce, Ed Bradley, W. M. Lassen and Henry Rosenthal, all Wichita oil producers. They hold 60 per cent. After royalty oil was deducted, about $150,000 was left for the lease owners. Corn will receive about $60,000. His money still is impounded with the court. By posting bond, other parties in the case were able to draw much of the money due them.

Hearings on the case during the four and one-half years it was in court have been held at Tulsa, Denver, St. Louis, St. Joseph, Mo., Minneapolis, Minn., Kansas City and Wichita.

Four similar cases were filed but later were compromised with Shell Petroleum Corp. These involved leases owned by Mead Brothers, Tulsa; Sutter & Pyle, Wichita; Derby Oil Co. and E. B. Shawver, Wichita.

ALASKAN DRILLING DELAYED

WASHINGTON, D. C., Jan. 25.—The lack of activity in the drilling of oil wells in Alaska has been regarded by some oil people as an indication of small prospect of finding petroleum in paying quantities in that northern area of the United States. However, that is not the view taken by the U. S. Geological Survey. It is true that all the petroleum production in Alaska in 1931 continued to come from wells of the Chilkat Oil Co. near Katalla, where, in addition to the oil wells, the company operates a small refinery.

The lack of activity in prospecting for oil in Alaska is interpreted by the Geological Survey simply to mean that with the present flood of oil in the United States the development of a new oil field in Alaska does not hold out sufficient inducement and that the large expenditure required would probably yield more immediate returns in other fields.

The drilling that has been in progress for a number of years in the region west of Chickaloon was continued during the early part of the summer of 1931 by the Peterson Oil Association. Various difficulties were encountered so that only a little new work was accomplished and drilling was soon suspended.—C.E.K.

NO NEW POOLS IN ROCKY MOUNTAIN AREA

(Continued from Page 93)

WYOMING

Summary of Wells Completed in 1931

County—	Comp.	Prod.	Dry	Gas
Big Horn	3	2,500	0	1
Carbon	5	0	5	0
Converse	3	600	0	1
Crook	1	7	0	0
Fremont	6	0	3	3
Johnson	1	0	1	0
Laramie	1	0	1	0
Natrona	8	3,236	1	0
Niobrara	5	0	2	3
Park	6	750	3	1
Sublet	1	90	0	0
Sweetwater	2	0	2	0
Weston	29	3,576	4	0
Total 1931	71	10,759	22	9
Total 1930	152	24,059	35	17
Difference	81	13,300	13	8

Completions by Months

	Comp.	Prod.	Dry	Gas
January	7	2,276	1	2
February	3	950	0	0
March	1	0	0	1
April	9	1,377	0	1
May	4	150	2	0
June	5	226	2	0
July	9	20	8	0
August	11	1,325	2	3
September	7	2,875	1	0
October	6	180	4	0
November	6	670	1	2
December	3	700	1	0
Total	71	10,759	22	9

MONTANA

Summary of Wells Completed in 1931

County—	Comp.	Prod.	Dry	Gas
Carbon	2	10	0	1
Carter	2	0	2	0
Cascade	2	0	2	0
Choteau	3	0	3	0
Custer	1	0	1	0
Daniels	1	0	1	0
Fergus	3	0	3	0
Glacier	20	50	2	17
Golden Valley	2	0	2	0
Hill	8	0	5	3
Judith Basin	1	0	1	0
Liberty	10	0	6	4
Pondera	3	31	1	0
Rosebud	4	0	4	0
Sheridan	1	0	1	0
Toole	29	718	12	9
Valley	1	0	1	0
Miscellaneous	3	0	0	3
Total 1931	96	809	47	36
Total 1930	182	5,791	68	40
Difference	86	4,982	21	4

Completions by Months

	Comp.	Prod.	Dry	Gas
January	5	31	0	2
February	6	15	3	2
March	5	12	1	3
April	4	0	4	0
May	4	21	2	1
June	2	15	1	1
July	13	95	4	6
August	8	420	0	5
September	9	0	3	6
October	2	0	0	2
November	33	0	27	6
December	2	200	2	0
Total	96	809	47	36

SUMMARY OF STATEMENTS MADE JANUARY 10, 1932, RELATING TO BUSINESS OF VARIOUS PIPE LINES FOR MONTH ENDING DECEMBER 31, 1931

	Gross stocks	Runs from wells	Other receipts	Regular deliveries	Other deliveries
Nat. Transit	647,268.73	134,728.53	978,341.72	654,540.59	590,457.15
S. W. Pa. P. L.	484,609.86	78,639.10	820,402.30	426,018.53	397,588.31
Eureka P. L.	1,206,561.60	304,834.50	366,121.18	318,074.34	350,236.53
Buckeye P. L. (Macksburg)	298,989.13	276,673.59	123,777.28	233,257.65	151,694.62
Buckeye P. L. (Lima, etc.)	2,890,304.17	77,185.73	2,705,364.98	1,578,295.69	907,911.13
Buckeye P. L. (Cleveland)	45,407.41	12,125.02	163,029.26	1,709.74	194,243.14
Indiana P. L.	543,883.89	2,581.64	1,328,357.76	738,240.58	610,234.33
Cumberland P. L.	64,500.81	.....	.....	242.81	.....
Southern P. L.	229,411.72	.....	154,155.12	61,182.44	43,915.22
Bradford Trans.	326,488.02	422,865.63	.....	448,373.68	.....
N. Y. Transit	146,567.39	42,593.82	167,892.22	176,524.14	.....
Northern P. L.	314,690.06	.....	468,405.83	134,129.64	334,256.03
Tide Water Pipe	1,107,832.07	24,880.76	.....	272,501.01	.....
Tuscarora Dev.	10,793.98	.....	.....	330,473.61	.....
Total December 31	8,315,308.74	1,377,108.32	7,285,917.75	5,273,564.45	3,580,536.45
Total November 30	7,864,863.72	1,279,014.73	6,542,989.00	5,317,052.79	3,097,415.32
Difference	450,445.02	98,093.59	742,928.75	43,488.34	483,121.13

QUIET YEAR IN CENTRAL AND WESTERN TEXAS

(Continued from Page 81)

WEST TEXAS

Summary of Operations by Counties in 1931

County—	Comp.	Prod.	Abd.	Gas
Andrews	1	50	0	0
Borden	1	0	1	0
Brewster	3	0	3	0
Coke	1	0	1	0
Concho	3	0	3	0
Crane	10	1,656	4	0
Crockett	3	72	1	0
Culberson	2	0	2	0
Dawson	1	0	1	0
Ector	5	778	1	0
El Paso	1	0	1	0
Fisher	11	4,554	4	0
Glasscock	3	0	3	0
Gaines	2	0	2	0
Howard	28	8,970	12	0
Hudspeth	3	0	3	0
Irion	12	195	10	0
Jones	24	1,502	13	0
Loving	32	6,999	7	0
Menard	5	0	5	0
Mitchell	4	135	1	0
Pecos	50	4,104	28	1
Reeves	4	0	4	0
Reagan	7	15,579	2	0
Schleicher	3	0	3	0
Scurry	4	20	3	0
Sterling	1	0	1	0
Taylor	6	35	4	1
Terrell	4	0	3	1
Tom Green	3	0	3	0
Upton	25	4,834	8	0
Val Verde	2	0	2	0
Ward	53	4,344	6	0
Winkler	4	57	3	0
Total, 1931	321	53,884	148	3

Summary by Months

Month—	Comp.	Prod.	Dry	Gas
January	49	2,010	32	0
February	48	9,268	20	0
March	31	3,939	13	1
April	33	3,502	16	0
May	28	4,562	14	0
June	32	2,708	15	1
July	21	9,369	9	1
August	32	3,828	16	0
September	7	708	2	0
October	12	2,120	3	0
November	14	8,802	1	0
December	14	3,068	6	0
Total, 1931	321	53,884	148	3
Total, 1930	733	357,669	233	12
Difference	412	303,785	85	9

A REVIEW OF OIL IN 1931

A "Review of 1931 in Oil" has been published by Ira Rinehart's Oil Report, of Tulsa. Information in the review was compiled largely from Mr. Rinehart's Daily Reports issued at Tulsa, by the staff of his Tulsa office, with the co-operation and assistance of various oil companies and the statistical departments of the oil associations. Production and refinery tabulations were compiled from weekly reports of the American Petroleum Institute and monthly reports of the Bureau of Mines. The volume was prepared and edited under the supervision of Arthur S. Davenport, editor of the Tulsa Edition of the Oil Reports.

A comprehensive index lists all subjects, reports, papers, graphs and charts contained in the review and the entire compilation forms a ready reference covering the major developments in the petrolum industry during the past year.

GEOLOGISTS HEAR TALK ON GEOPHYSICAL METHODS

SHREVEPORT, La., Jan. 23.—W. M. Barret presented a paper entitled "Principles of Magnetic Prospecting" before the Shreveport Geological Society Thursday evening. The meeting was held in the research laboratory of William M. Barret, Inc., and was illustrated by lantern slides, as well as special apparatus used in geomagnetic exploration.

It was explained by Mr. Barret that an intimate relation existed between geology and geophysics, and that this newer branch of science, which has received its principal application to the problems of petroleum geology during the past decade, simply provided the geologist with an additional means for gaining information concerning conditions beneath the surface of the earth. He pointed out that with further refinements that might confidently be anticipated, the geologist would find still greater use for this modern tool for probing the earth's secrets, particularly with the coming of deep drilling for oil and gas.

It was explained that all recognized geophysical methods depend for their operation upon the nonhomogeneous character of the lithosphere, or the outer rock shell of the earth. The various rocks that compose the lithosphere exhibit differences in elasticity, density, electrical conductivity and magnetic properties. These variations give rise to the seismic, gravimetric, electric and magnetic methods, respectively.

In outlining the principles of the magnetic method of prospecting. Mr. Barret explained that the earth is surrounded by a magnetic field, and that this field undergoes certain changes in magnitude and direction as a result of differences that occur in the physical composition and shape of the underground formations. The specific object of the method is to determine the shape of the buried formations from an analysis of the related magnetic phenomena and having determined this subsurface information the geologist is enabled to reach valuable conclusions as to what areas are considered favorable for the accumulation of oil and gas.

Following a discussion of the fundamental conceptions of magnetism, it was shown how these basic facts could be used in the theoretical solution of practical problems. The magnetic response associated with several forms of typical structure was illustrated from practical data obtained in the field.

There followed a brief discussion of the orthodox measuring instruments used in the field, and of the special laboratory apparatus that has been developed for improving the technique of interpreting the field data in terms of geologic structure.

Mr. Barret was assisted in his lecture by R. H. Mayer, W. H. McCartney, R. M. Walford, Jr., and S. D. Roland.

WEST TEXAS

Daily Average and Monthly Production of Crude Oil in 1931

Field and county—	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
OGDEN, ANDREWS:													
Daily average	131	137	59	64	.....	.....	.....	.....	.....	.....	.....	.....	
Month	4,061	3,836	1,829	1,920	.....	.....	.....	.....	.....	.....	.....	.....	11,646
CHURCH FIELDS & McELROY, CRANE:													
Daily average	20,228	19,257	19,414	18,716	18,622	17,404	15,280	14,928	15,340	15,567	16,075	15,527	
Month	627,068	539,196	601,834	561,480	577,282	522,120	473,680	462,768	460,200	482,577	482,250	481,337	6,271,792
SAND HILLS, CRANE:													
Daily average	15	8	.....	.....	.....	34	36	16	25	16	17	18	
Month	465	224	.....	.....	.....	1,020	1,116	496	750	496	510	558	5,635
WADDELL, CRANE:													
Daily average	27	22	31	21	29	24	6	.....	.....	.....	.....	.....	
Month	837	616	961	630	899	720	186	.....	.....	.....	.....	.....	4,849
WORLD, CROCKETT:													
Daily average	1,518	1,662	1,651	1,595	1,566	1,460	1,653	1,272	1,207	1,139	1,093	1,018	
Month	47,058	46,536	51,181	47,850	48,546	43,800	51,243	39,432	36,210	35,309	32,790	31,558	511,513
PENN, ECTOR:													
Daily average	6,644	6,479	5,748	6,336	6,716	6,457	6,555	7,519	7,049	6,828	6,342	5,841	
Month	205,964	181,412	178,188	190,080	208,196	193,710	203,205	233,089	211,470	211,668	196,260	181,071	2,388,313
COWDEN, ECTOR (NORTH):													
Daily average	28	38	35	146	128	76	72	73	73	83	83	81	
Month	868	1,064	1,085	4,380	3,968	2,280	2,232	2,263	2,190	2,573	2,490	2,511	27,904
SETTLES-ROBERTS & CHALK FIELD, HOWARD-GLASSCOCK:													
Daily average	21,300	26,528	22,929	28,182	29,458	29,989	28,235	28,489	28,741	27,545	26,013	23,714	
Month	660,300	742,784	710,799	845,460	913,198	899,670	875,285	883,159	862,230	853,895	780,390	735,134	9,762,304
STEPHENS, FISHER:													
Daily average	1,051	902	743	730	696	620	573	642	823	940	922	887	
Month	32,581	25,256	23,033	21,900	21,576	18,600	17,763	19,902	24,660	29,140	27,660	27,497	289,568
BOREN, GARZA:													
Daily average	28	27	26	23	19	17	11	6	9	.....	5	.....	
Month	868	756	806	690	589	510	341	186	270	.....	150	.....	5,166
TANKERSLEY, IRION:													
Daily average	70	69	68	67	52	54	62	58	85	60	63	60	
Month	2,170	1,932	2,108	2,010	1,612	1,620	1,922	1,798	2,550	1,860	1,890	1,860	23,332
WHEAT, LOVING:													
Daily average	2,737	3,167	3,686	3,504	4,233	3,608	3,249	3,038	3,249	3,612	3,744	3,404	
Month	84,847	88,676	114,266	105,120	131,223	108,240	100,719	94,178	97,470	111,972	112,320	105,524	1,254,555
WESTBROOK, MITCHELL:													
Daily average	1,875	1,975	1,922	1,962	1,962	1,921	1,792	1,816	1,848	1,776	1,740	1,696	
Month	58,125	55,300	59,582	58,860	60,822	57,630	55,542	56,296	55,440	55,056	52,200	52,576	677,429
YATES, PECOS:													
Daily average	83,234	89,578	91,827	85,931	68,645	71,788	70,844	71,599	72,101	69,869	63,287	60,914	
Month	2,580,254	2,508,184	2,846,637	2,577,930	2,127,995	2,153,640	2,196,164	2,219,569	2,163,030	2,165,939	1,898,610	1,888,334	27,326,286
TAYLOR LINK UNIVERSITY, PECOS:													
Daily average	1,834	1,879	1,767	1,668	1,499	1,392	1,347	1,193	1,125	1,048	990	966	
Month	56,854	52,612	54,777	50,045	46,469	41,760	41,757	36,983	33,750	33,488	29,700	29,946	508,136
MASTERSON, PECOS:													
Daily average	8	21	15	20	.....	.....	.....	.....	.....	.....	.....	.....	
Month	248	588	465	600	.....	.....	.....	.....	.....	.....	.....	....	1,901
PECOS VALLEY, PECOS:													
Daily average	26	242	200	175	30	.....	129	254	316	343	351	339	
Month	806	6,776	6,200	5,250	930	.....	3,999	7,874	9,480	10,633	10,530	10,509	72,987
BIG LAKE, REAGAN:													
Daily average	23,397	31,587	27,316	31,742	19,398	22,416	27,320	25,001	24,155	23,978	29,282	27,414	
Month	725,307	884,436	846,786	953,266	601,338	672,480	846,920	775,031	724,650	743,318	878,460	849,834	9,501,820
McCAMEY, CRANE-UPTON:													
Daily average	5,615	5,408	5,496	5,252	5,140	5,180	4,945	4,618	4,719	4,830	4,515	4,141	
Month	174,065	151,424	170,376	157,560	159,340	155,400	153,295	143,158	141,570	149,730	135,450	128,371	1,819,739
O'BRIEN, WARD:													
Daily average	2,218	2,316	2,568	2,618	2,472	2,214	1,956	2,106	2,158	2,684	2,987	2,616	
Month	68,758	64,848	79,608	78,540	76,632	66,420	60,636	65,286	64,740	83,204	89,610	81,096	879,378
SHIPLEY-BENNETT, WARD:													
Daily average	649	845	853	878	1,144	1,194	1,063	940	893	653	829	720	
Month	20,119	23,660	26,443	26,340	35,464	35,820	32,953	29,140	26,790	20,243	24,870	22,320	324,162
HENDRICK AND LECK, WINKLER:													
Daily average	45,339	48,933	46,772	43,796	42,906	42,310	40,632	38,571	39,226	36,190	35,188	33,719	
Month	1,405,509	1,370,124	1,449,932	1,313,880	1,330,086	1,269,300	1,259,592	1,195,701	1,176,780	1,121,890	1,055,640	1,045,289	14,992,723
LLANO-SCARBOROUGH, WINKLER:													
Daily average	1,840	2,129	1,934	1,864	1,809	1,757	1,616	1,246	1,264	1,216	1,122	1,072	
Month	57,040	59,612	59,954	55,920	56,079	52,710	50,096	38,626	37,920	37,696	33,660	33,232	572,545
DUNNIGAN, TAYLOR:													
Daily average	107	130	135	96	88	102	77	63	47	54	59	53	
Month	3,317	3,640	4,185	2,880	2,728	3,060	2,387	1,953	1,410	1,674	1,770	1,643	30,647
IRA, SCURRY:													
Daily average	6	6	5	2	.....	.....	.....	.....	.....	.....	.....	.....	
Month	186	168	155	60	.....	.....	.....	.....	.....	.....	....	.....	569
Daily average	219,925	242,345	235,200	235,421	206,613	210,017	207,448	203,448	204,452	198,431	194,707	184,200	211,685
Total 1931	6,817,675	6,813,660	7,291,190	7,062,640	6,404,972	6,300,510	6,431,033	6,306,888	6,133,560	6,151,361	5,841,210	5,710,200	77,264,899
Total 1930	10,608,833	9,574,215	10,412,647	9,436,801	9,667,141	9,130,220	9,139,390	8,177,844	7,800,596	8,081,504	8,110,063	7,620,660	107,759,964
Total 1929	11,380,341	9,966,066	11,609,104	10,599,784	10,990,292	10,987,539	12,331,644	11,603,989	10,994,567	11,245,661	10,411,381	10,667,906	132,788,274
Total 1928	8,821,701	9,036,190	10,380,877	11,149,642	9,873,668	8,947,700	10,618,416	10,735,515	10,307,046	10,842,478	9,716,950	10,202,810	120,632,993
Total 1927	2,126,352	1,857,800	2,331,510	2,752,080	3,514,935	3,333,150	3,490,693	4,255,804	5,405,430	6,441,924	6,583,410	7,596,569	49,689,657

CALIFORNIA EXPERIENCED RATHER A POOR YEAR

(Continued from Page 101)

cated within the confines of the Ventura Avenue Field have yet been drilled entirely through the Pliocene.

California has the distinction of having the deepest commercial producer. The world's deepest commercial producer is No. 57 Lloyd of the Associated Oil Co. in the Ventura Avenue Field. This well was completed April 28, 1931, flowing 4,850 bbls. of clean 31.6 gravity oil and 4,500,000 feet of natural gas per day from 8,823 feet.

Seven productive zones in the Pico (lower Pliocene) have been found in the Ventura Avenue Field up to the present time. The latest sand encountered was the 57 zone, discovered in the Associated Oil Co.'s No. 57 Lloyd, the deepest commercial producer finished up to the present. The bit was still in the pay when drilling operations were concluded in this well after passing through over 500 feet of oil sand in the new deep zone. This well is 800 feet deeper stratigraphically than any other well drilled in the Ventura Avenue Field and has penetrated 4,878 feet below the base of the Gosnell shale. This represents the enormous thickness of the oil zone already proven up in the Ventura Avenue Field, and, as has already been mentioned, the bottom of production has not yet been reached.

Long Strings of Pipe

During the early part of 1931, the North American Oil Consolidated successfully landed and cemented 6,763 feet of 13⅜-inch 68-pound casing in No. 1 Blauvelt, located in the north dome of Kettleman Hills in Section 36-21-17. No difficulty of any kind was experienced in landing this string of pipe despite the fact that the dead weight, approximately 217 tons, placed an unusually heavy strain on the rig and other equipment used. This pipe was run in and cemented and the entire job completed in 18½ hours. It required 35 minutes to mix and pump the cement into the hole and another 1½ hours to force it up around in back of the casing. The 6,763 feet of 13⅜-inch casing landed in No. 1 Blauvelt constitutes the longest string of this size pipe ever run in a California well and is believed to have set a record for the world in general to shoot at. Later in the year, the North American established another record in this State by landing 8,485 feet of 9⅝-inch pipe in the same well. The Powell-Stockton Investment Co. late in 1931 established a record for 16-inch steel surface casing when 1,934 feet of this pipe, having a total weight of 65 tons, was landed and cemented in No. 1 Certner, located in the north dome of Kettleman Hills in Section 32-22-19.

A number of large wells were completed at Kettleman Hills in 1931. Several of them showed initials in excess of 20,000 bbls. per day, particularly wells finished in the Huffman area in the extreme western end of the structure. These large initials were secured in the Ochsner zone, which is now the chief source of production in the north dome. With but few exceptions, all wells completed in the north dome during 1931 were completed in the Ochsner black oil zone. Of special interest, as far as Kettleman Hills development is concerned, was the killing of the Milham Exploration Co.'s discovery well and the subsequent killing of the Continental Oil Co.'s initial completion in that area. Both of these wells were defective mechanically and although neither hole could be cleaned out to bottom, heavy surface fittings were installed and the wells recompleted under perfect control. The Kettleman North Dome Association assumed an operating status in March, 1931, and this organization is at the present time operating all government leases as a single unit.

Successful Unit Development

Unit development, as being carried out by the Kettleman North Dome Association in the north dome of Kettleman Hills, has proven so successful that operators in other fields are giving serious consideration to the possibility of undertaking similar work. The discovery of a new deep zone in the Elwood Field of Santa Barbara County by the Barnsdall and the Rio Grande companies is expected to lead to unitization of deep zone development in that district. The middle dome of Kettleman Hills where the Petroleum Securities recently revealed the presence of commercial production will probably also be brought under unit development. The deep zone discovery well of the Barnsdall and Rio Grande at Elwood was No. 14 Bell Luton, which blew in during a water shut-off test on the 8⅝-inch landed and cemented at 4,325 feet. This hole, bottomed at 4,385 feet, showed an initial potential of 2,500 bbls. of 40.1 gravity oil per day from the Sespe formation. This well was a former upper zone producer before being deepened as an exploratory well. The General Petroleum opened up a new zone in the Capitan Field of Santa Barbara County during 1931 but this horizon appears to be of only minor consequence. The General Petroleum's discovery, like the Barnsdall and Rio Grande's discovery at Elwood, was made in the Sespe formation. Production of the Capitan Field during 1931 was secured in the Vaqueros formation and after several wells had been completed in this formation, the General Petroleum drilled a deep test to determine the potentiality of the underlying Sespe. This well, No. 8 Erburu, finished at 2,422 feet, pumped 218 bbls. of 41.9 gravity oil per day. The Capitan Field is rather unusual as far as coastal fields are concerned. The Vaqueros formation in this field, for instance, does not have sufficient gas to result in a natural flow, and, unlike the Elwood Field where the Vaqueros yields a 40 gravity oil, Capitan produces a heavy crude averaging approximately 16° A.P.I. The Sespe formation at Capitan also differed from the Sespe at Elwood as in this horizon again the lack of gas pressure forced the company to install pumping equipment.

Strenuous efforts were undertaken in California during 1931 to control crude oil production, but, with the exception of the co-operative curtailment program, little headway was made. Attempts to enforce police power of the State were unsuccessful as enforcement work was stopped by litigation.

MANY STATES TO SEE WILDCATTING IN 1932

(Continued from Page 102)

the Cut Bank area in Glacier County which will not only develop additional gas reserves for the Montana Power Co., but will explore the territory to the west and southwest for oil. These will call for some drilling by The Texas Company. Southwest of Cut Bank, in Section 2-34n-6w, the B. & H. Oil Co. completed a 50-bbl. producer in 1931, and exploration around that well will call for some additional drilling. The extent of this discovery has not been revealed as only the one well has reached the pay.

The Dry Creek Dome in Carbon County has been proven by the Ohio Oil Co. and it is only one of a series of structures in that district. The Ohio company is now testing one of these, the Golden Dome, to the east of Dry Creek, and it is probable that several others will be drilled during the year.

Another play is expected in Liberty County, in the Sweetgrass Hills, to the northeast of the Kevin-Sunburst Field, as a result of a small discovery made by the Western Natural Gas Co. in its No. 1 Hicks, C NW NE, Section 26-37-4e. This well was drilled for gas, but encountered oil in sufficient quantities to indicate possibilities in that area.

There is also talk of some testing being done in eastern Montana where sands in the Quadrant formation offer the best opportunities, but no definite plans for these have been announced.

Exploring New Mexico

In New Mexico, no distinct play is in sight, but representatives of a number of major companies have been going over the territory in Lea and eastern Eddy Counties extensively the past summer with geophysical instruments and if the price of oil increases, several tests probably will be drilled. The most favored area is to the northwest and southeast of the Hobbs Pool, where comparatively little wildcatting has taken place.

Wildcat exploration in California during the next year is expected to be a little broader in scope although no great change is anticipated in the amount of work undertaken, even in comparison with the limited amount of prospecting done during 1931. Exploration work last year was far below normal and substantially lower than the average amount of wildcatting started in recent years. This decline is attributed to the low range of prices which prevailed during the period in question and the retrenchment program of major operators, which resulted in a virtual cessation of all drilling early in the year. The outlook for California at the present time is for decreased drilling all along the line even in proven fields.

There has been a very marked interest in the central part of the State during the

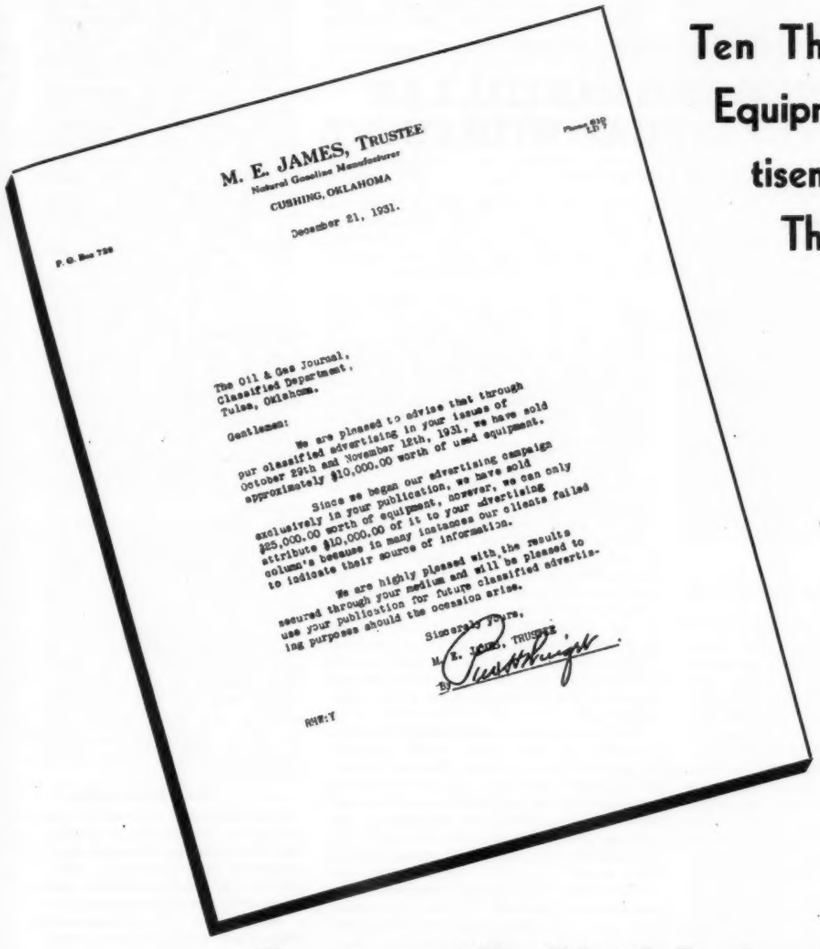
CALIFORNIA POTENTIAL DAILY PRODUCTION, 1931

1931—	Marketable daily production	No. of wells producing	Curtailed— Daily production	Curtailed— No. of wells	Total potential— Daily production	Total potential— No. of wells
January	531,798	9,387	301,391	5,960	833,189	15,347
February	533,248	9,295	291,132	6,029	824,380	15,324
March	527,898	9,125	292,820	6,311	820,718	15,436
April	526,785	9,130	284,115	6,339	810,900	15,469
May	530,612	8,995	295,601	6,481	826,213	15,476
June	521,381	8,981	310,426	6,517	831,807	15,498
July	519,139	8,815	354,463	6,543	873,602	15,358
August	505,451	8,712	391,763	6,689	897,214	15,401
September	506,020	8,617	398,458	6,769	904,478	15,386
October	504,903	8,644	395,528	6,751	900,431	15,395
November	499,923	8,624	410,043	6,719	909,966	15,343
December	501,967	8,612	426,698	6,697	928,665	15,309
Daily average	517,340	8,911	346,436	6,484	863,776	15,395

CALIFORNIA CRUDE OIL PRODUCTION, JANUARY-DECEMBER, 1931, INCLUSIVE
(Barrels of 42 U. S. gallons)

Northern fields—	January	February	March	April	May	June	July	August	September	October	November	December	Total	Daily
Coalinga	275,559	245,324	266,491	252,521	262,644	258,587	261,724	236,083	231,709	234,604	224,741	228,395	2,978,392	8,160
Elk Hills	459,038	410,610	453,465	446,137	453,170	408,875	366,654	377,881	367,828	398,689	389,470	393,819	4,925,636	13,495
Fruitvale	64,203	59,019	63,743	72,087	70,406	68,460	68,582	68,236	71,359	77,455	84,285	99,884	867,719	2,377
Kern River	335,500	311,916	331,010	339,367	350,161	317,396	319,702	330,447	308,628	312,800	299,164	301,382	3,857,474	10,568
Kettleman Hills	691,096	751,974	805,020	783,962	1,189,446	1,750,652	2,246,192	1,964,993	1,854,499	1,855,875	1,800,098	1,851,017	16,544,824	45,328
Lost Hills-Belridge	200,535	182,400	202,869	172,557	190,787	295,494	307,020	291,132	279,917	289,809	285,324	285,905	2,983,749	8,175
McKittrick	114,890	104,741	112,336	110,607	61,831	56,870	61,811	58,762	55,600	56,383	54,925	54,966	903,722	2,476
Midway-Sunset	1,650,788	1,492,641	1,632,322	1,618,479	1,650,439	1,523,335	1,556,083	1,547,926	1,481,050	1,543,481	1,483,941	1,547,976	18,728,461	51,311
Mount Poso	235,603	210,303	232,852	228,366	245,323	253,704	268,454	279,801	272,674	266,056	256,162	260,076	3,009,374	8,245
Round Mountain	10,178	6,388	6,825	6,300	8,575	10,298	19,430	14,022	22,968	42,307	51,311	46,824	245,426	672
Wheeler Ridge	17,240	15,001	16,604	15,799	16,597	15,663	16,563	15,472	15,741	16,368	15,700	16,149	192,897	528
Coastal fields—														
Capitan	31,486	19,078	2,619	.....	.....	.....	.....	.....	.....	.....	.....	.....	53,183	146
Elwood	1,022,024	871,074	1,078,562	1,067,909	1,082,278	872,444	807,329	812,232	769,367	774,353	703,932	608,612	10,470,056	28,685
Lincon	72,908	60,966	68,623	58,800	59,514	56,788	56,561	60,295	56,084	55,261	54,696	49,682	710,178	1,946
San Miguelito	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,399	15,850	24,249	66
Santa Barbara	7,161	9,800	5,515	9,960	17,120	4,800	7,865	7,905	16,786	13,175	5,253	5,540	110,880	304
Santa Maria	77,762	72,709	79,728	81,000	93,119	95,130	89,649	95,229	84,380	86,652	80,513	78,934	1,015,205	2,781
Summerland	6,158	4,713	4,714	5,000	5,073	4,925	4,556	5,202	4,539	4,575	4,030	3,600	59,115	162
Ventura Avenue	1,347,525	1,251,396	1,386,281	1,344,816	1,348,734	1,243,366	1,225,732	1,231,730	1,208,796	1,230,428	1,176,086	1,260,365	16,255,256	44,535
Ventura-Newhall	128,724	108,787	111,403	110,275	116,854	112,690	106,173	100,397	101,819	107,679	101,619	119,205	1,325,625	3,632
Watsonville	1,937	1,750	1,938	1,908	1,937	1,875	1,937	1,938	1,875	1,938	1,875	1,887	22,795	62
Southern fields—														
Coyote	305,318	292,387	324,003	310,215	310,168	299,916	326,615	325,550	308,379	323,202	312,305	313,799	3,751,857	10,279
Domingues	306,686	330,788	368,858	355,019	358,913	340,242	344,387	343,560	318,447	386,718	330,177	399,257	4,183,052	11,460
Fullerton (Brea Olinda)	329,648	291,681	331,474	301,638	310,259	291,867	300,597	293,886	292,236	298,049	290,981	293,692	3,626,008	9,934
Huntington Beach	706,862	601,953	685,876	653,210	667,536	616,884	631,157	636,992	596,005	662,965	628,326	690,783	7,778,549	21,311
Inglewood	478,877	428,453	471,702	458,023	499,852	426,207	428,826	426,874	413,175	423,311	408,651	425,174	5,289,125	14,491
Lawndale	10,009	8,479	8,139	10,974	9,326	13,928	8,891	11,356	11,199	11,329	8,605	9,435	121,670	333
Long Beach	2,877,291	2,657,598	2,788,994	2,637,562	2,665,528	2,398,683	2,415,948	2,353,863	2,378,742	2,363,383	2,263,494	2,365,323	30,166,409	82,648
Los Angeles-Salt Lake	43,821	40,313	44,325	43,290	42,095	39,108	35,750	35,544	34,678	36,708	34,706	34,226	464,564	1,272
Montebello	215,612	198,421	221,956	214,333	217,156	198,725	203,801	198,106	189,625	197,967	189,714	200,636	2,446,052	6,702
Newport	1,235	1,120	1,141	1,117	1,051	172	.....	.....	387	190	.....	484	6,897	19
Playa Del Rey	1,103,265	914,431	972,752	921,531	901,554	800,469	756,696	699,036	667,588	711,253	647,607	662,836	9,759,018	26,737
Potrero	33,678	24,191	22,358	18,542	17,019	39,925	36,617	26,963	35,587	38,539	25,626	34,115	353,160	968
Richfield	211,410	196,123	211,211	204,110	212,954	205,774	197,869	197,205	188,521	207,672	195,576	204,761	2,433,186	6,666
Rosecrans	140,523	134,485	123,986	114,641	115,650	104,713	102,675	101,171	102,266	104,639	101,790	97,913	1,344,452	3,684
Santa Fe Springs	2,222,519	1,995,081	2,204,480	2,149,409	2,233,232	1,963,938	1,963,940	1,931,126	1,870,635	1,895,519	1,872,666	1,970,115	24,272,660	66,501
Seal Beach	521,660	418,388	490,778	457,790	428,770	836,512	325,436	364,807	348,944	392,858	388,435	407,737	4,882,115	13,376
Torrance	181,945	168,269	187,434	189,929	192,719	172,518	182,305	182,602	179,249	188,549	178,130	188,132	2,191,781	6,005
Whittier	43,034	38,171	42,455	36,358	41,230	40,503	39,794	40,660	39,328	41,244	38,987	32,497	474,261	1,299
Total	16,485,738	14,930,932	16,364,842	15,803,541	16,448,960	15,641,436	16,093,322	15,668,984	15,180,610	15,651,983	14,997,700	15,560,984	188,829,032	517,340
Daily average 1931	531,798	533,248	527,898	526,785	530,612	521,381	519,139	505,451	506,020	504,903	499,923	501,967	.....	517,340
Daily average 1930	709,137	745,916	635,483	625,625	614,337	600,693	606,517	605,499	599,477	588,518	603,648	573,765	.....	624,931

Another convincing proof of valuable reader interest!



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past 60 days and this will be manifested early in 1932 by the drilling of several exploratory holes in the northern counties, especially Tehama, Yolo, Solano and San Joaquin Counties. The Union Oil Co. has already started a new wildcat a few miles southeast of Tracy in San Joaquin County and the outcome of work on this test may exert an influence on the future operations of other prospectors in this general area. The Union has approximately 8,500 acres under lease in this section of the State and will consequently be sitting on top of the world if No. 1 Tracy results in commercial production. The Standard has acquired about 2,500 acres of potential oil land south of Red Bluff near Corning, in Tehama County, where considerable leasing has been done during the past several months and, while nothing has yet been done to indicate early work, the company will in all probabilities make a test in 1932, unless subsequent developments are unfavorable. East of Corning, The Texas Company, Cities Service and Union have acquired several thousand acres, but since immediate drilling is not required, it may be several months before a test is drilled.

San Joaquin Basin

Kern County and the coastal area, comprising Ventura, Santa Barbara and San Luis Obispo Counties, will of course receive special attention. The San Joaquin Basin, due to the vast amount of untested acreage and favorable geologic formations, will undoubtedly receive careful consideration during the new year. A large part of this prospective work will be located in Kern County in as much as this area is one of the most important sections of the basin as far as the number of oil fields is concerned. Kings and Fresno Counties, reflecting the successful outcome of work in the north and middle domes of Kettleman Hills, will probably also see some new drilling in 1932, although this area is not particularly hot at present. In the coastal area of Ventura, Santa Barbara and San Luis Obispo Counties, locations have already been staked for several new wildcats and additional work may be anticipated from time to time. The Barnsdall and Rio Grande, co-discoverers of the Elwood Field of Santa Barbara County and likewise discoverers of production on the Golconda anticline at Wheeler Ridge, recently consummated a lease of 1,750 acres of the Harris ranch located just to the north of the Golconda area. This new lease, which is southwest of Careaga in Santa Barbara County and a little less than 2 miles northwest of the Vaqueros Major Oil Co.'s lease on the extreme eastern end of the Purisima anticline, is expected to be tested out early in 1932.

Channel Island Play

The Standard Oil Co. has recently undertaken extensive reconnaissance work in the Santa Barbara Channel islands and is expected to start one or two tests during 1932. About a year ago the company acquired exclusive drilling privileges on Santa Cruz Island, which contains approximately 50,000 acres. Within the past several months the Standard consummated similar arrangements for exploration work on Santa Rosa Island, located almost due east of Santa Cruz Island. The Santa Barbara Channel islands are located just off the Santa Barbara coast line due south of the Elwood Field and southwest of the Ventura Avenue and Rincon Fields of Ventura County. They are especially interesting from a geological standpoint because of their relative position with respect to the group of oil fields dotting the coast line of Santa Barbara and Ventura Counties. Both the Elwood anticline and the major Ventura Avenue anticline plunge out beneath the water of the Santa Barbara Channel. It is quite obvious therefore that one or more potential oil fields are located out in the Santa Barbara Channel in navigable water too deep to permit exploration work.

The Standard is not basing its exploration work in the Channel islands on the assumption that it may be able to intercept the Elwood or Ventura Avenue anticlines but rather on the possibility that Santa Cruz and Santa Rosa Islands may contain another series of parallel folds. Several years ago the Barnsdall and Continental contemplated wildcat exploration on the Santa Cruz and Santa Rosa Islands but no actual work was undertaken. A rather comprehensive geological survey has been made of the two islands and a number of structures have been mapped. The possibility of developing commercial production is problematical, however, and will consequently be definitely determined only by actual exploration work. It is the general consensus of opinion that this group of islands fully justifies the drilling of one or more conclusive tests.

In southern California there are very few promising areas which have not yet been explored and consequently the possibility of new fields in this area is not great. It goes without saying, of course, that several new exploratory holes will be drilled in Los Angeles Basin during 1932. The odds are too great, however, to entertain hope that a new oil field will be opened up in this section of the State. The El Nido area southeast of the Lawndale Field and the district near Buena Park offer the best possibility of successful exploration work. The Mohawk Oil Co. has already started a wildcat near El Nido and recent leasing activities near Buena Park indicate the possible drilling of a test in this area early in 1932.

In the Shreveport Division

The outlook for wildcatting in Louisiana, Arkansas and Mississippi, is expected to increase this year. With the oil situation clearing up somewhat, and the near-by East Texas fields under an allowable of 400,000 bbls. daily, the wildcatters are expected to resume where they left off over six months ago when overproduction caused the low levels in the price of crude.

There are several areas in this division that should experience quite a bit of wildcatting as a result of operations during 1931. The Sabine Parish territory, in Louisiana, particularly around the Zwolle Field, had enough recent wildcat developments to warrant the continuance of activities. The whole area seems to be made up of separate pools from 1 to 2 miles apart, and with from two to three of these extensions uncovered each year, the incentive is there to wildcat for them. In fact, there are many tests already at work in Sabine Parish, several of which have had enough results for further explorations. R. L. Gay, trustee, is making a deep test of his No. 1-A Long Bell Lumber Co., Section 10-8-13, several miles northwest of the field. The test is now in the lower Cretaceous at 4,374 feet. Farther northwest, J. J. Keen, trustee, has had several good shows of oil in his No. 1 Belton, Section 31-9-13. This well has checked high all along the log and records the base of the chalk at 2,115 feet. Since the recent show of gas in the Loring Oil Co.'s deep test in the field proper, an impetus has been given to deeper drilling in the Zwolle area in the hope of finding a regular paying zone that is less hazardous than the upper pay in the chalk rock. In as much as this test picked up the lower Cretaceous and possibly the upper Trinity at a less depth than other fields on the Sabine uplift producing from this horizon, indicates that the prospects are good for picking up another producing zone in this area.

The results of the Langbridge Oil Co.'s well, 5½ miles southeast of the Pleasant Hill Field toward Zwolle, should attract other tests to that vicinity. The well has flowed from 30 to 50 bbls. of high gravity oil, daily, since its completion in October. Northwest Bossier Parish, near the Plain Dealing Oil Co.'s test, will get a play as indicated by the Gulf Refining Co.'s assembling a large block in that section. The two best Trinity gas fields, Rodessa and Sugar Creek, are yet in the first stages of development and should have steady extensions during the coming year.

Gas Prospecting

The discovery of gas in commercial quantities in northeast Shelby County will evidently be followed up with development, and the many good showings obtained in wildcats drilled around Center in the same county, would indicate a continuance of activities there. The other East Texas counties, with the exception of the gas area in Panola, are not expected to experience much wildcatting during 1932, at least not to the extent of the past year. The tests in these counties during the past 12 months have practically proven the futility of looking for oil in paying quantities in the upper horizons.

In Mississippi

Mississippi has lots of virgin territory yet to be explored and with the recent showing of oil in the Gulf Refining Co.'s wildcat in Clarke County so pronounced, that section of the State is sure to have other tests as well as many other counties not yet drilled.

In Arkansas

Much of the drilling in Arkansas will probably depend on the results of the Lion Oil Co.'s deep test in the Smackover Field which is now in progress at a total depth of 7,255 feet. Miller County, which gave promise a year ago of opening up a new pool has passed out of the picture with several failures in the vicinity of the Lentz discovery well. If demands for gas show an upward trend, it is possible that the gas area of Johnson and Franklin Counties in the north central part of the State will show more activity. Several wildcats now in progress in that State may develop something to spur up wildcatting, but

BRIEFS UPHOLDING MARTIAL LAW IN EAST TEXAS FILED WITH COURT

By Special Correspondent

TYLER, Tex., Jan. 25.—Three briefs have been filed for the defendants Gov. R. S. Sterling, Brig. Gen. Jacob F. Wolters and Adj. Gen. W. W. Sterling in the case of E. Constantin and others vs. Lon Smith and others before a three-judge federal court, organized under Section 266 of the judicial court.

One of the briefs is by former Gov. Dan Moody and E. F. Smith, attorneys for the defendants. It contains 63 pages and almost at the conclusion reads:

"Here the act sought to be enjoined is the act of the governor of Texas, and which action of the governor was performed in obedience to the mandate of the constitution of the State of Texas that he, the governor, shall cause the laws to be faithfully executed. The act sought to be enjoined is an act of the State of Texas in its sovereign or governmental capacity. In fact, it involves, in character at least, the very existence of the government itself. It cannot be successfully contended that the constitution of the State of Texas, which makes it the duty of the governor to cause the laws to be faithfully executed and then authorizes him in his discretion and judgment to use the military force for that purpose, is contrary to or in violation of the Fourteenth Amendment to the Constitution of the United States. The question is—can the governor, in the exercise of his discretion, for and on behalf of the State of Texas, be enjoined from using the military forces of the State to restrict unlimited production of crude petroleum by plaintiffs? The State of Texas, acting through its governor, has declared that this restrictive measure is necessary under the police power of the State to maintain good order, safety, and protect the public welfare in the affected area. This is an act of the State of Texas, and is a proceeding within the authority of a law which does affect the State of Texas in its sovoreign or governmental capacity, and is not simply an illegal act upon the part of an officer of the State in attempting by the use of the name of the State to enforce a legislative enactment, which is void because unconstitutional."

Another brief was filed by Paul D. Page, Jr., attorney for the same defendants and concludes as follows:

"As a lawyer, I am concerned about my clients' cause. As a citizen, I am concerned lest a decision issue which in the language of a chief justice of the United States, would constitute an expression of opinion calculated though not intended, to cripple the constitutional powers of the government.

"As an officer of the court, I am concerned lest the court—motivated by a laudable desire to make our system of government a more perfect one than our fathers fashioned for us—by encroaching upon the territory of the executive, obliterates that line of demarcation between the departments of government of which Daniel Webster spoke, and which John Marshall cherished, and in so doing destroy the only barrier which protects the court itself from executive invasion.

"As a Texan, I am concerned for the welfare of Texas. I am concerned lest I see wrested from my State forever one of its few remaining rights, the inherent and essential right of self-defense."

A third brief is of great interest because it was prepared by T. W. Gregory, formerly attorney general of the United States during the administration of President Woodrow Wilson. Mr. Gregory appears as amicus curiae. His brief is on behalf of the defendants, Governor Sterling, General Wolters and General Sterling.

The brief concludes as follows:

"There have been various definitions of the term 'martial law' and many of them have gone so far as to say that it had no limits and merely consisted of whatever the military commander willed to do; no such powers have been attempted to be exercised in this case by the governor and his subordinates, and what is before the court is the question of the governor's power, not to do all that the term 'martial law' might imply, but to do what he did do, and a consideration of his power should be limited by his actual acts and those of his subordinates.

"It is my understanding that what the governor has been doing in the exercise of martial law, as above limited, is primarily and above all things preserving order and preventing riot, insurrection and criminal acts, which he considered imminent, and restricting the production of oil solely as a means of accomplishing these ends.

"In doing this he has exercised only the power conferred on him for those ends, and in considering this case I believe that the underlying decisive principle, which should dispose of it in favor of the defendants, is the proper consideration of the three independent divisions of government and their respective functions, the legislative department making the laws, the executive department enforcing them, and the judicial department construing them.

"If the governor had the power to exercise the character of martial law he did, or if the use of his discretion in so doing is not reviewable by the court, it is obviously a matter of no importance what incidental results, such as the increase or decrease in the price of oil, resulted therefrom. The plaintiffs' damage, if any, is also merely incidental, and must yield to the public good.

"In case the court should set aside such martial law as the governor exercised it would disturb a large business district in which affairs appear to be proceeding in an orderly way, and certainly risk, if not invite, riot, turmoil, and insurrection, which do not now exist, and which the governor believed were impending and to prevent which he established martial law.

"In no event can the court afford to strike down the power exercised by the governor and risk the threatened reign of lawlessness in the field involved on any doubtful construction or proposition not clearly sustained."

there is no safe prediction at the present time as to what extent operations will be carried on in Arkansas in 1932.

Prospecting in Southwest Texas

Wildcatting in 1932 in Southwest Texas will be more or less general over the territory with nearly every county getting a little. The Bancones fault, over 250 miles in length and around 3,000 feet, about the deepest necessary to reach the Edwards lime, has long been popular territory, especially for the independent and small operator. It has plenty of open spaces for new pools and production possible in the Taylor marl, Edwards lime and Serpentine. Only a few tests were drilled along the line last year west of San Antonio and these mainly in Medina and western Bexar County and were fruitful in developing a little very shallow production in Medina near Chacon Lake.

East and northeast of San Antonio there have been efforts by several operators to find some more serpentine plugs in eastern Travis and western Bastrop Counties, the search being stimualted by the success of the Chapman Pool in eastern Williamson, which is immediately north of eastern Travis and western Bastrop. No new pools were opened except in southwestern Bastrop County, where Schimmel & Batts completed three producers a little southwest of the Yoast Pool, topping serpentine at 1,357 feet, 1,416 feet and 1,460 feet. The best well came in for about 100 bbls. a day.

The Serpentine lies above the Austin chalk and in the belt where it is found it is reached at quite shallow depths and tests are easily drilled and hence it is an inviting proposition. There is sure to be considerable wildcatting along this line the coming year and also along the same general line for Edwards lime production.

There is an idea being born in the minds of geologists that removing a little farther from the Balcones and running up through Wilson, Gonzales, Fayette, western Washington and Burleson there will be a good chance of picking up Edwards lime production, but it means drilling to around 4,000 to 5,000 feet and perhaps deeper. While that territory has not been entirely neglected in the past years it has never been very popular. The industry may not reach it in 1932, but eventually it will do so.

The Reynosa outcrop during 1932 will get quite a play. The Pettus Field brought attention to its possibilities originally and plans were all made for quite extensive work in 1931, but were delayed and held in abeyance on account of East Texas. Since then the wildcat producer southeast of Conroe in Montgomery County, also producing in the Pettus sand, has greatly extended the territory and added interest to it.

Wildcat work in 1932, as to its extent, in Southwest Texas, will depend much on how the country works out of the depression, but late in 1931 it is evident that there will be more than there was in 1930. Some of this undoubtedly will go to the Edwards Plateau region, especially now since the turn of the year the Evans & Gant No. 2 Love has gone into such a good showing of oil in the Ellenberger at 5,839 feet, at this writing standing nearly full of oil.

It is cable tool work and expensive deep drilling but with over 4,000 feet of Pennsylvania above the Ellenberger and many thick sands.

Attention to Coastal Counties

Another territory that first came to get serious attention of the wildcatters in 1930 and got its full share of what wildcatting there was done during 1931 is the coast counties from Refugio County south. Much of the 1931 plans were never carried out in that territory but promise to be carried out in 1932.

Late in 1931 a dozen or more wildcats were starting up in western Hidalgo and eastern Starr Counties near the Mexican border. This is a reflected play from that on the Mexican side of the river which resulted in some good showings and the completion of a big gas well in 1931. The belief is that the structural conditions extend on across the river into Texas.

The Laredo territory will continue to get its share of wildcatting during the year 1932. Many wildcat operators have made money in that territory. Production is shallow and drilling costs low. The deep sand possibilities of the area scarcely have been scratched. The area is fairly well dotted with production and the wildcatting follows pretty much the established lines to pick up extension pools.

Wildcatting in Michigan

Several new projects were started in Michigan toward the close of 1931 which have not yet been completed. A new wildcat will be drilled in St. Joseph County early in 1932.

Two of the latest projects are wildcats started in Chesterfield Township, Macomb County, and in Milford Township, Oakland County, both in the southeastern corner of the State.

Kansas Wildcat Development

The central western part of Kansas has a promising future for the drilling of wildcat tests. The territory includes Ellsworth, Barton, Stafford, Rice, Rusesell, Rush, Harvey and McPherson Counties, but other counties to the west and south are also certain of exploration.

The area covered by the Barton or Ellsworth arch includes considerable undeveloped territory in Stafford, Rice, Barton, Ellsworth and Russell Counties, along which 22 wildcat tests have found oil production during the last 2½ years. The majority of the discoveries are still one-well pools, covering a distance of approximately 70 miles north and south. This area no doubt covers the principal territory in which the wildcat development will take place in 1932. All the wells in this territory found production in the Siliceous lime from which large petroleum reserves can be taken. The importance of the area soon became apparent to oil operators and all of the available acreage is now under lease.

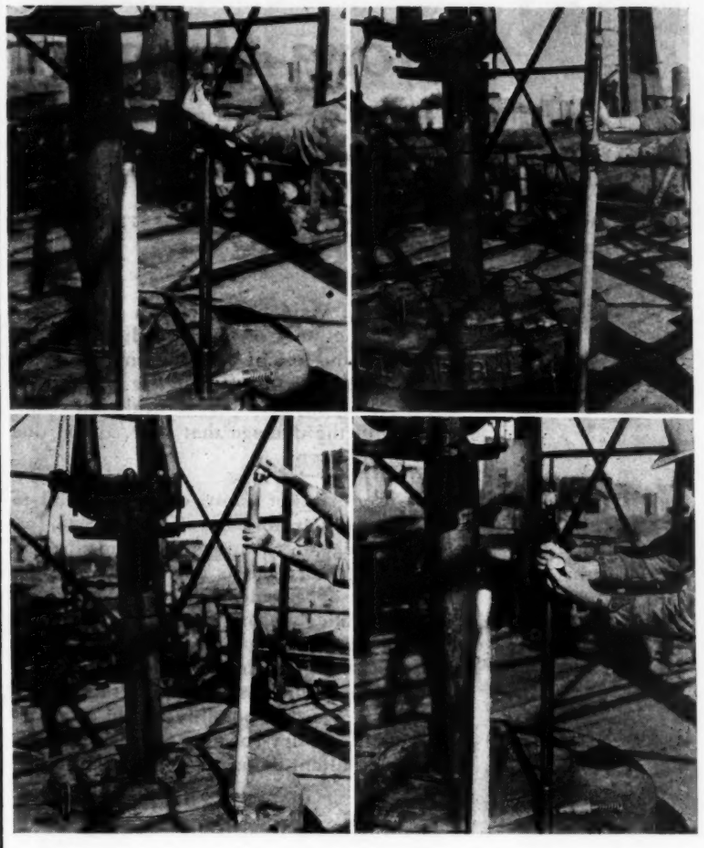
The area covered by the Barton or Ellsworth arch is a large subsurface structure covering parts of seven counties with a northwest-southeast trend. All of the wildcat wells that have been found are located on the flanks of the structure. In addition to the Barton or Ellsworth arch, it is believed that there are other structures in the same area which have been located by core drill and seismograph, which will also be developed.

Another area that is believed to be promising is the Cheyenne Bottoms in Barton County. Considerable acreage has been leased in the area and some dry holes have been completed. Geophysical machines were moved into the bed of the lake last summer after the water vanished and the ground became hard enough for cars to travel over. The lake bed was leased to several companies.

The discovery of gas in Haskell County in the southwestern part of the State extended the possible gas producing area 25 miles from the nearest gas well. The finding of gas in the wildcat in Section 29-30-34w, Haskell County, indicated that a large territory was possible for development from a wildcatting standpoint in the southwestern part of the State. The Hugoton gas field was only partly developed, future wildcatting was possible in all the territory surrounding Stevens, Morton, Grant and Haskell Counties.

McPherson County also presents a large unexplored area. The county has the largest producing area of any yet found west of the Meridian line that runs through the central part of the State. Most of the drilling has been in or near the proven areas to date and during the coming year a large part of the present undeveloped territory will be exploited.

Rooks, Ellis and Trego Counties are also in line for considerable wildcatting during the year. These counties are now in the producing column and leases are near the expiration date and companies will make an effort to protect leases by drilling wells. These western counties have been carefully selected after an intensive geophysical survey has been made of the western part of Kansas, and the companies are protected by leasing large blocks of acreage.



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EAST TEXAS DEPRESSED WHOLE OIL INDUSTRY

(Continued from Page 56)

compared with the previous year, and was at the lowest ebb in crude oil output in many years.

The Central Texas, or Ranger Field, which once cut a large figure in Mid-Continent oil production, has no major pools remaining and its total production of 8,023,804 bbls. last year was a decline of 5,324,399 bbls. from its 13,348,203 bbls. of 1930. Like the North Texas area, this field has been drilled up and down, and across and in between, and is not generally regarded as having a future of great importance, even though it is likely that numerous new producing spots will be developed within it.

Oklahoma Held Back

The production of Oklahoma in 1931 was 175,703,848 bbls., an average of 481,380 bbls. per day. The State could have produced 1,000,000 bbls. a day if there had been a market and facilities to handle the oil. It was under rigid restriction most of the year, and for a time the flush fields were shut in or restricted under direct governmental orders, backed by the state militia thrown into the fields by order of Governor Murray on August 4 in an effort on his part to force oil purchasers to pay $1 per barrel for oil.

The price of crude oil on July 8 was lowered to 10 cents per barrel for crude oil below 29 gravity; 11 cents for 29 gravity oil, with 1 cent added for each degree upward to 40 degrees and over, which brought 22 cents per barrel for the highest grade oil. On July 24 these prices were increased 20 cents per barrel on each grade, but Governor Murray was not satisfied. He demanded $1 per barrel. He was speaking in the interest of the State of Oklahoma, which had a big stake in the matter with its 3 per cent gross production tax and its royalty interests in oil produced on state school lands.

Production took a sharp drop, of course, but the governor did not realize his ambition to obtain a $1 price and receded from his stand enough to permit a considerable increase in production when the shut-in fields were reopened. Martial law was maintained through the remainder of the year, although the force was reduced to a handful of commissioned officers.

Oklahoma's production last year was 40,410,743 bbls. less than in 1930 and 100,318,176 bbls. less than in Oklahoma's banner producing year, 1927. This indicates the measure of sacrifice Oklahoma oil producers were made to suffer. This sacrifice was particularly hard on Oklahoma City operators, who have a tremendous investment in wells and lease equipment, the wells alone costing an average of about $160,000 each. It is doubtful if the drilling of all the wells that will be put down in the big East Texas Field will equal in cost the drilling of the wells that make up the Oklahoma City Field.

Oklahoma City produced 44,822,508 bbls. in 1931 and 34,603,067 bbls. in 1930. The Seminole Field, which now comprises a dozen pools, produced 40,485,350 bbls., while in 1930 the field produced 66,217,239 bbls., indicating a decline of 25,731,889 bbls. The St. Louis-Pearson Field produced 7,277,798 bbls., as against 11,566,947 bbls. the year before. No new pools of importance were developed in the State last year, wildcatting having fallen to the lowest ebb in many years.

Declines in Western Texas

The West Texas Field, in which comparatively little drilling was done last year, suffered a heavy decline in production compared with the previous year. The total crude oil output of that important division was 77,264,899 bbls., while in 1930 it was 107,759,964 bbls. The big year for this division was 1929 when 132,788,274 bbls. of oil was produced. The Yates Pool fell from 40,578,656 bbls. in 1930 to 27,326,286 bbls. Hendricks declined from 25,925,581 bbls. to 14,992,723 bbls., but Big Lake increased from 7,016,204 bbls. to 9,501,820 bbls. by reason of successful deep drilling. The Chalk-Settles Pool fell off from 11,188,886 bbls. to 9,762,304 bbls. The Church-Fields-McElroy area, which produced 11,582,342 bbls. in 1930, made only 6,271,792 bbls. last year.

The Panhandle suffered its share of the general slump, producing a total of 20,860,248 bbls. in 1931 and 32,492,032 bbls. in 1930, its best year. The Gray County Field produced 14,861,340 bbls. last year and 21,782,549 bbls. in 1930, its banner year.

Conservative Coastal Operators

While Gulf operators proved the productiveness of numerous salt domes and other areas, they did not follow up the discoveries with a drilling campaign, and the big South Texas and South Louisiana Field declined in production from 71,200,514 bbls. in 1930, its banner year, to 58,160,255 bbls. last year, of which 48,373,927 bbls. was produced in Texas and 10,119,068 bbls. in South Louisiana. Gulf coastal companies produced only as much oil as their refinery demands warranted, some of the companies with big production in East Texas devoting time and money to that field instead of to the development of their coastal properties.

In Southwest Texas the influence of East Texas was also felt and that field, which has a score of undeveloped pools with a well or two completed, experienced a general decline in development work and production. Southwest Texas last year produced 25,342,065 bbls., as against 31,033,194 bbls. in 1930. The important Darst Creek Field fell off in production from 11,345,682 bbls. in 1930 to 7,963,694 bbls. last year, but the Mirando Field increased from 4,097,075 bbls. to 5,063,071 bbls. through extensions. The Mirando Field is made up of numerous pools. The Pettus Field also increased its record in 1930 having been 1,662,067 bbls. and last year 2,364,790 bbls.

Kansas Held Down All Year

Kansas was held back throughout 1931 because of unfavorable market conditions. Pipe line companies were slow in building outlets from new pools because these refinery customers were too well supplied with oil from elsewhere. The State produced 38,956,338 bbls., while in 1930 it produced 42,123,347 bbls. Never in the State's history could it have poured out as much oil as in 1931. It could easily have averaged 150,000 bbls. per day for the year, but its average was kept down to 106,730 bbls., with a peak of 119,322 bbls. during February. Important pools were opened but not developed on the Ellsworth-Barton Arch, a great structure covering parts of Ellsworth, Barton, Russell, Stafford, Rice and Reno Counties, but a real increase in production was accomplished in the Ritz-Canton Field in McPherson County. Ritz-Canton entered the class of major pools before the year was over and produced 3,553,028 bbls., while in 1930 it produced 1,188,950 bbls. The Voshell Pool, in the same county, increased its production from 3,758,701 bbls. to 5,546,284 bbls. It reached its peak in February with a daily average of 21,611 bbls. for the month and had declined to 10,000 bbls. a day before the end of December. The Sedgwick County or Wichita Field, declined from a total of 7,719,801 bbls. in 1930 to 5,840,234 bbls. in 1931. The big unproduced potential production of Kansas lies in McPherson County and in the Ellsworth-Barton arch area.

Hobbs' B'ggest Year

The Lea County Field in New Mexico nearly monopolized the interest in the Rocky Mountain area. The Hobbs Pool, one of the big producing areas that was held under strict proration by voluntary means, backed by the state government, produced only 12,796,306 bbls. last year, but this compared very favorably with its 6,571,097 bbls. of the previous year. The potential production of the Hobbs Pool is rated high, but the field is underlain by salt water, which might ruin it if the wells were permitted to flow openly. It is considered sound policy to produce the field slowly, and this has been done consistently, and drilling of the producing area held back.

Michigan the Eastern Feature

In the fields east of the Mississippi River the Mount Pleasant Field's exten-

sion in the Isabella-Midland area in Michigan was the outstanding event of the year. The Pure Oil Co. controls the output and owns much of the production in this pool and has handled it conservatively. The wells come in with initial production at 2,000 bbls., or thereabouts, but the production has been kept under 15,000 bbls. a day. In the other Central West Fields, including Illinois, Indiana, Kentucky and Central and Western Ohio, the year was uneventful. A rigid curtailment of the Pennsylvania grade oil fields of New York, Pennsylvania, West Virginia and Southeastern Ohio kept production down to a point where operators could command a market price sufficient to cover the expense of producing the oil, if no more. The big fields in that area, Bradford and Allegany, where more than half the Pennsylvania grade oil comes from were partly shut in and little drilling was done.

California's Curtailment

In California, where average daily production in 1931 fell off 107,000 bbls. per day as compared with the average in 1930, and 289,000 bbls. per day as compared with 1929, considerable decline was noted in the production of some of the notable fields. Kettleman Hills increased from 6,209,357 bbls. in 1930 to 16,544,824 bbls. in 1931, but in the same part of the State the Midway-Sunset Field declined from 23,487,147 bbls. to 18,728,461 bbls. The Elwood Field in the Coastal district declined from 14,606,007 bbls. to 10,470,056 bbls. and Ventura Avenue from 17,493,155 bbls. to 16,255,256 bbls. Long Beach dropped from 36,599,688 bbls. to 30,166,409 bbls. Santa Fe Springs was hardest hit of all, its production in 1930 having been 44,251,396 bbls., an average of 121,237 bbls., while last year it was permitted to produce only 24,272,660 bbls., an average of 66,501 bbls. per day. For the first time in years California did not have a field that averaged 100,000 bbls. per day last year.

Louisiana-Arkansas

The North Louisiana and Arkansas fields held out nothing of a sensational character throughout the year. Production dropped off as might be expected in old pools where little drilling was done in an effort to stay the decline. The famous Smackover Field fell off in production from 13,904,390 bbls. in 1930 to 12,044,935 bbls. last year.

STANDARD OF KANSAS PRESIDENT'S LETTER

President A. S. Hopkins of the Standard Oil Co. of Kansas has sent the following letter to the stockholders:

"C. B. Wrightsman, of Tulsa, and for about two years a director of this company (a son of C. J. Wrightsman) is soliciting stockholders for proxies for the annual meeting March 9, 1932. He apparently questions the efficiency of the company's past and present management and seeks to supply one of his own choice. The purpose of this letter is to give stockholders facts from which to determine whether the present management, or one of Mr. Wrightsman's choosing, will best serve their interests.

"This company first commenced business under its own independent management at the time of the so-called "Standard Oil dissolution." It then had an authorized capital stock of $1,000,000 and net assets of $1,032,289.35. That was January 1, 1912. On December 31, 1931, it had $8,000,000 of outstanding stock and net assets of $8,415,851.02. During that time (from January 1, 1912, to December 31, 1931) it also paid stockholders, in cash, dividends aggregating $6,120,000. No more outside money has ever been put into the business and all of the company's achievements have been on the original $1,000,000 of capital and earnings. In other words, on $1,000,000 of capital, the company has earned during that period approximately $13,500,000 or an average of over $675,000 annually. An owner of one share on January 1, 1912, which then had a book value of $103.23, now owns 32 shares (par value having been changed in the meantime from $100 to $25 per share) of the aggregate book value on December 31, 1931, of $841.58; and has, in addition to that, received cash dividends aggregating $612. That averages approximately 67 per cent yearly earnings on the original capital.

"In the year 1928 it was the opinion of the management that the company's most pressing need was a crude oil transportation system, protected by an adequate supply of crude. Favorable contracts were negotiated for satisfactory amounts of crude and our own pipe line system was built to the best producing fields of Kansas. Every barrel of crude oil used by the company since that time has been transported through the company's own lines and this has resulted in a marked saving as compared to our former method of receiving crude. Also, a natural gas pipe line system has recently been built by the company to nearby gas fields through which a large percentage of our fuel requirements is transported direct from the wells to the plant, thus reducing our fuel costs.

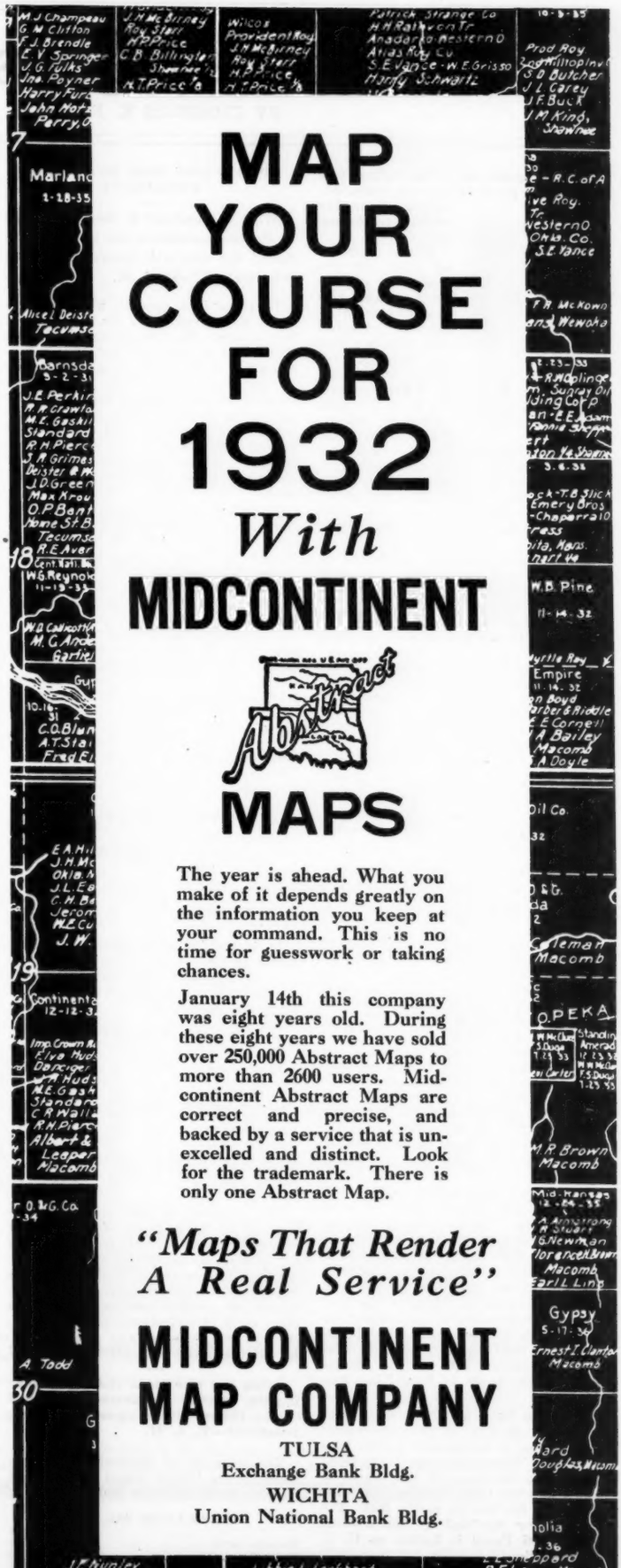
"It was further believed that the company should be protected over future years by controlling its own crude oil production. Accordingly, practically all of the shares of the Tulsa Oil Co., an Oklahoma producing corporation, were purchased. At the time of this purchase, the Tulsa Oil Co. had no production but owned several blocks of well selected leases. This company now owns properties that would actually produce more than 50,000 bbls. of crude oil per day if the runs were not restricted by proration. In addition to this, the Tulsa Oil Co. has approximately 30,000 acres of well selected, undeveloped oil and gas leases which we regard as of substantial present value—and of much greater future value. The activities of the Tulsa Oil Co. have been most satisfactory and our investment in its stock already results in a handsome increased valuation for us, which, however, is not reflected in our balance sheet.

"Numerous propositions have been considered over the past few years for changing our marketing position. Due to the greatly overbuilt condition of the marketing end of the business, it was felt that the establishment of our own outlets under those conditions would only aggravate an already almost intolerable situation in our own territory and would prove unwise from an investment standpoint. The experiences of other companies along this line have proven that our course has been wise and that investments in pipe lines and crude production have been more logical than investing in already overdone retail outlets. We have, fortunately, been able to make contracts for the sale of our products at prices uniformly better than could have been obtained on the open market and better, too, than other refiners have received, especially those who have retailed their own output.

"Our refinery at Neodesha, Kans., has a capacity of 20,000 bbls. of crude oil per day and has been kept thoroughly modern by timely improvements. Substantial savings in manufacturing costs have been thus secured. Further improvements are now being made to successfully produce the higher antiknock gasolines which the motoring public demands.

"Of course, we regret the omission of dividends but stormy times seemed ahead and we thought it best to keep our house in order to weather the storm and at the same time get in position to take advantage of opportunities that the times might afford. Our cash position is excellent for these times but, even though well fortified with cash and government bonds, we could not long pay dividends without impairing our capital stock and, as you know, it would be unlawful for us to pay dividends that would impair our capital.

"We are enclosing a notice of the annual meeting of stockholders and a proxy and hope that in the event you cannot be present in person you may indicate your approval of the management by signing and returning the proxy. If you have already given your proxy to others and desire now to have your shares voted for the present management, the execution of the proxy enclosed will enable you to do so."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MAPS
The year is ahead. What you make of it depends greatly on the information you keep at your command. This is no time for guesswork or taking chances.
January 14th this company was eight years old. During these eight years we have sold over 250,000 Abstract Maps to more than 2600 users. Midcontinent Abstract Maps are correct and precise, and backed by a service that is unexcelled and distinct. Look for the trademark. There is only one Abstract Map.
"Maps That Render A Real Service"
MIDCONTINENT MAP COMPANY
TULSA
Exchange Bank Bldg.
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Union National Bank Bldg.

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

ORIGIN NAVY AND NEW NAVY GASOLINE SPECIFICATIONS

What was the authority for the grade of gasoline known as Navy and New Navy gasoline? Were these terms official? Was the sweet doctor test ever required for U. S. Motor gasoline?—C. E.

The first specifications covering petroleum products to be announced by the United States Fuel administration were published October 2, 1918, in compliance with an order issued by President Wilson under date of July 31, 1918, in Bulletin No. 1, Report of Committee on Standardization of Petroleum Specifications. This bulletin contained specifications for aviation gasoline and motor gasoline; these were followed by a section under the title "Tests and Specifications for Navy Petroleum." This led to adoption by the trade of the term Navy gasoline for the product described under the title "Motor Gasoline."

The gasoline mentioned in Bulletin No. 1 of the Fuel Administration was required to meet the following on distillation: Initial boiling point 140° F., 20 per cent at 221° F., 50 per cent at 275° F., 90 per cent at 356° F. and endpoint 428° F. When this specification was revised, November 25, 1919, by the Federal Specification Board, as follows: Initial 131° F., 20 per cent at 221° F., 50 per cent at 284° F., 90 per cent at 392° F. and endpoint 437° F., it became known in the trade as New Navy gasoline.

The terms Navy and New Navy were never used in any of the government specifications to designate a special kind of gasoline. They originated in the trade through use by salesmen and others to avoid confusion with the numerous gasolines sold for use as motor fuel. The gasoline now specified by the Federal Specification Board is known as U. S. Motor gasoline.

According to my personal recollection, and the references available, the doctor tests have never been a part of the specification for motor gasoline, as published by the Federal Specification Board.

PARAFLOW FOR REDUCING POURPOINT

What is paraflow? Is there any merit to the recommendation for its use in reducing the cold test (pourpoint) of lubricating oils?—C. J. M.

Paraflow is a product which has recently been prepared by the Standard Oil Development Co. According to United States Patent No. 1,815,022, it is a condensation product of an alaphatic and an aromatic hydrocarbon which when blended with a relatively high pourpoint lubricating oil will cause a decided lowering of the pourpoint and improve the viscosity temperature coefficient, viscosity index, without the removal of wax by the comparatively expensive methods now used.

An extended article on the subject appeared in The Oil and Gas Journal, November 12, 1931, page 46, by Davis and Blackwood, Pure Hydrocarbon Improves Flow of Lubricating Oil at Low Temperatures. The material following is in part from this article and the patent mentioned.

The patent states: A paraffin wax of 122°/125° F. melting point is chlorinated at 200° F. for 24 hours; added to naphthalene chloride in proportions 90 parts chlorinated wax, 10 parts chloride and 10 parts naphthalene. These are allowed to react for 24 hours, the temperature rising to 200°, in the presence of kerosene, which is used as the solvent. The product has the properties shown in the table.

PROPERTIES OF PARAFLOW

	Patent	Article
Gravity, A.P.I.	23.4	23.8
Saybolt U. V. Vis. @ 100° F.	8,500	3,612
Saybolt U. V. Vis. @ 210° F.	312	214
Pour	65°F.	25°F.
Flash	535°	555
Conradson carbon, per cent	4 6	1.99
Color, Robinson	....	¼
Cast	....	Green

It is claimed that additions of one-fourth to 1.5 per cent of this product to paraffin base lubricating oils reduces the pourpoint from around 30° F. to below 0° F. An example is:

ACTION OF PARAFLOW

	S.A.E. 30 motor oil	Same +1% paraflow
Gravity, A.P.I.	27.4	27.5
Vis. @ 210°	62.3	62
Vis. @ 100°	481	474
Viscosity index	96	97
Pourpoint, °F.	30	—10
Flashpoint, °F.	415	415
Conradson carbon	0.815	0.829
Color—Robinson	2.25	2
Cloud	....	....
Demul. @ 130° F.	1,620	1,620
S. E. No.	30	30

The pourpoint of lubricating oil is influenced by the quantity of wax present and its complete removal from the lubricating fraction during the refining process is expensive and difficult. It will be important if this new product will be shown by service tests to function as these early investigations indicate.

LUBRICATING OIL CONSUMPTION

Could you give me a statement showing the quantity of lubricating oil used in the United States, especially for automobiles?—T. A. M.

The quantity of lubricating oil produced in the United States in 1930 and its disposal is shown in the table:

LUBRICATING OIL, 1930

	Barrels
Manufactured	34,201,000
Shipped	31,499,000
Demand	31,588,000
Export	9,936,000

According to information collected by the Bureau of Mines the yield of lubricating oil from the petroleum refined during 1930 is equivalent to 3.7 per cent and of this quantity less than 1½ per cent is used in automobiles. The average annual consumption per car is between 18 and 20 gallons, so with 26,000,000 cars in use in the United States something like 500,000,000 gallons of lubricating oil are required.

NAMES FOR PETROLEUM PRODUCTS

What is the relation, if there is any difference, between benzine, naphtha and gasoline? What is the meaning of motor spirit as used in England and other countries; does it always signify gasoline?—G. C. R.

There is little use for the term benzine at this time; formerly it was applied to what is now called naphtha. The term benzine is sometimes used by the refiner to designate an unfinished distillate which contains a large portion of gasoline requiring further treatment. This may be distillation and chemical treatment or both. Naphtha may be looked upon as heavy gasoline; that is, gasoline from which the front, or light end, has been removed. Motor spirit is commonly meant for what we call gasoline, although it seems to be used in somewhat the same way as the term motor fuel. Such use would include any liquid consumed in the automobile engine.

The Petroleum Times, December 19, 1931, prints a table which was prepared by E. W. Steinitz and published in Petroleum. This table shows the names of the several important petroleum products as used in five important countries.

PETROLEUM PRODUCTS IN FIVE COUNTRIES

	German	English	American	French	Russian
(1)	Rohol Erdol, roh Naphtha, roh	Petroleum Crude oil	Petroleum Crude oil Crude	Huile brute Petrole brute	Seeraya neft
(2)	Petrol-Ather Gasoline Leichtbenzin Normal-Benzin	Light petrol	Light gasoline	Essence a petrole volatile	Benzinovy zefy Gasolin Legky benzin
(3)	Benzin (fraction) Rohbenzin	Benzine	Benzine	Benzine	Legky benzin
(4)	Benzin Motoren benzin	Petrol Motor spirit	Gasoline Gas (popular)	Essence Essence moteur Essence a petrole	Benzin
(5)	Losungs-benzin Test-Benzin Wasch-Benzin Solvent-Naphtha Terpentin-Ersatz	White spirit Solvent naphtha	Naphtha Solvent naphtha	White spirit Solvent naphta	Legky benzin Test-Benzin
(6)	Petroleum Leuchtol Solarol Erdol (err.) Traktoren-Brennstoff	Kerosine Paraffin oil Paraffin	Kerosene	Petrole lampant	Kerosin Osvetitelnoy maslo Solyarovoy maslo Traktornoy topleevo
(7)	Gasol Dieselol Schwerol Rohol (err.)	Gas oil Diesel oil	Gas oil Diesel oil	Gas oil Huile pour Diesel	Gasoil Diesolnoy topleevo
(8)	Heizol Mazut Pakura	Fuel oil	Fuel oil Furnace oil	Fuel oil Mazout	Topotshny mazoute Mazoute
(9)	Benzol Reinbenzol	Benzene	Benzene	Benzole	Benzol Chisty Benzol
(10)	Benzol Motoren-Benzol	Benzole	Benzole	Benzole Benzole moteur	Benzol Motorny Benzol
(11)	Alkohol Spirit Athylalkohol	Alcoholic spirit	Spirit	Alcool	Spirt Alkohol Etilovy spirt

Notes (abbreviated) on the above classes: (1) "Rohol" ("crude oil") applied to Diesel engine fuel is erroneous, and should be "Gasol." (2) Distil under 140° C. (3) Fractions distilling up to about 220°; "Benzine" and "straightrun gasoline" are American technical terms unknown to motorists. (4) Collective names for various products beginning to boil between 28° and 60° and ending between 150° and 230°. (5) Mostly begin to boil between 100° and 150°, with an attenuated "tail" rising to 220°. (6) Distillation products with S-shaped boiling curve, beginning between 150° and 170° and ending between 290° and 325°. Illuminating oils are internationally standardized. Solar oil burns with a specially clear and bright flame.

PURITY OF NATURAL CARBON DIOXIDE

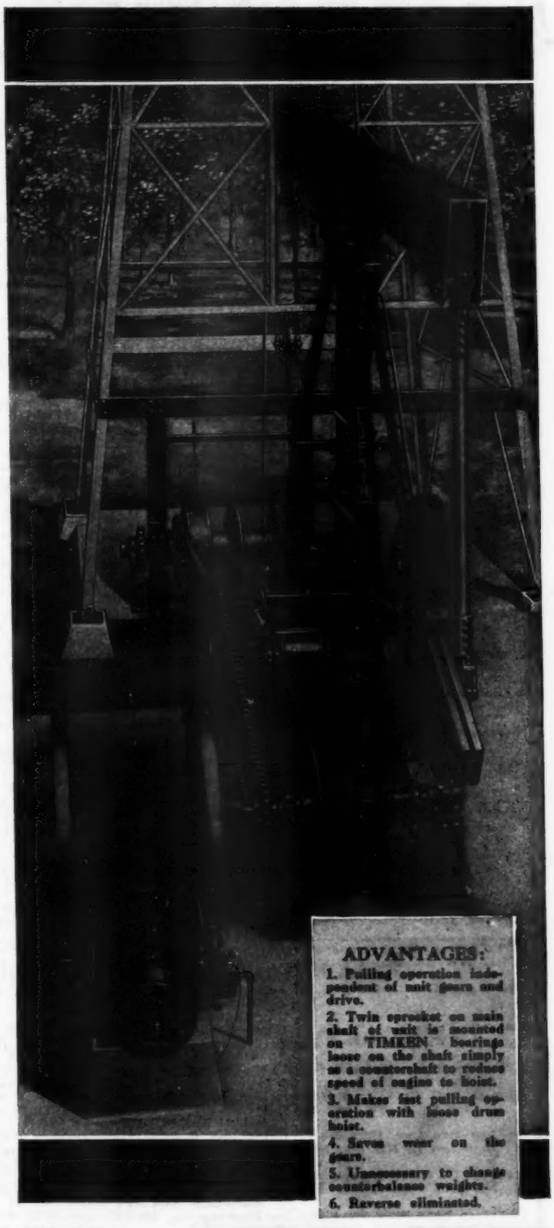
Is it true that all carbon dioxide gas as produced from wells is contaminated with sulphur and oily substances which give the solid ice an objectionable odor and taste?—E. S. K.

Carbon dioxide may occur in natural gas from a trace to very close to 100 per cent. A large part of the carbon dioxide gas is found containing more or less hydrogen sulphide and hydrocarbon vapors which give the gas an objectionable odor, and if the purifying process is not complete enough of either or both will remain to be easily detected by odor or taste. When these impurities are present in large quantities adequate purification is not possible because of the expense, but the small quantities normally present are easily removed by chemical treatment so the solid carbon dioxide is made free from disagreeable odors and substances which may impart an objectionable taste to food products.

Some of the carbon dioxide found is of exceptional purity. The gas found at Klickitat Springs, Washington, is reported to be practically pure, as shown by the analysis:

Klickitat Springs, Wash., Carbon Dioxide	Per cent
Carbon dioxide	99.60
Oxygen	0.03
Nitrogen	.37
Hydrogen sulphide	none

The Klickitat Springs carbon dioxide gas is said to be one of the few deposits on the continent that is free from hydrogen sulphide, an impurity frequently affecting similar gases found elsewhere.


ADVANTAGES:
1. Pulling operation independent of unit gears and drive.
2. Twin sprocket on main shaft of unit is mounted on TIMKEN bearings loose on the shaft simply as a countershaft to reduce speed of engine to hoist.
3. Makes fast pulling operation with loose drum hoist.
4. Saves wear on the gears.
5. Unnecessary to change counterbalance weights.
6. Reverse eliminated.

The picture—
Typical hook-up
LUFKIN UNIT
with gas engine drive.

Pulls Rods and Tubing Without Turning Crank or Gears. . . . .

This Lufkin Herringbone Unit, with but slight change in its regular standard set-up is truly a "general purpose" unit. By means of a *Timken* equipped twin sprocket mounted on the main unit shaft both unit and hoist operation are made independent of one another. There is no need to shift weights; and the power ordinarily required to turn gear and crank is entirely eliminated.

This Unit is particularly adaptable for gas engine drive but can be arranged for any type prime mover.

Write for complete details today!

Lufkin Foundry & Machine Co.
Lufkin, Texas

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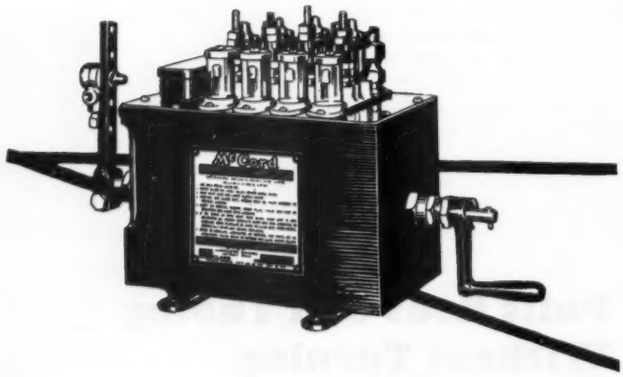
MODERN PRODUCTION EQUIPMENT

Lufkin Permanent Equipment is manufactured at Lufkin, Texas, within two hours drive from the East Texas oil fields.

Branch offices and warehouses are maintained at Houston, Tulsa, Los Angeles, New York, Odessa, Eldorado, Seminole.

EAST TEXAS HEADQUARTERS: Henderson, Texas, on Crim Crest Hill, P. O. Box 516—'phone 142.

The "LD" Belongs On *Your* Pump Engines, Too!



Accuracy and stamina have, for years, been synonyms of McCord Lubricators.

These characteristics are constantly illustrated by actual experiences, one of which is passed on to you.

A couple of years ago—in the Oklahoma fields—a McCord "LD" Lubricator was installed on a power pump engine, way up in the hills. Shortly after, severe cold weather set in, followed by a blizzard. The oiler was unable to approach the engine for over a day—and thought, of course, it was ruined. Imagine his surprise when finally getting to it he found it chugging along in perfect order.

Think of an engine being efficiently lubricated and operating with absolutely no attention for over a day in a 14 degree below zero blizzard. That's what we mean when we say McCord's are dependable.

There is a McCord for every job—the mechanical sight feed of the "LD" was the answer in this case—had a lubricator with gravity sight feeds been used the engine's ruination was inevitable.

Let McCord engineers assist you in the selection of the proper lubricator for your next new equipment or for replacement on your present—the same dependable service, as was here illustrated, can be yours.

McCORD
RADIATOR & MFG. CO.
(LUBRICATOR DIVISION)
McCord also manufactures McKim Metallic Asbestos Gaskets widely used throughout the oil fields. Ask for catalog No. 17
DETROIT MICHIGAN

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 39)

Relitt Oil Co.'s No. 1 Ganno hrs., 300 ft. S and E, NW cor. NW NE, Sec. 12-11-16 ..... S.D. 1,965 ft.
A. R. Smith's No. 1 Horn, Sec. 16-12-16, NE cor. Sec. .. Rigging up.
A. A. Tutin's No. 1 Mickie, Sec. 7-13-12..... Location.
Walters-Nicholson, tr.'s No. 1 Jim Guy, Sec. 3-11-13 .... S.D. 1,266 ft.

MOREHOUSE PARISH

United Gas Public Service Co.'s No. 2 Sandidge, Sec. 11-20n-4e, 656 ft. S, 1,332 ft. W, NE cor. NW .. ....S.D.; high wtr. 2,132 ft.

NATCHITOCHES PARISH

Dr. H. S. Gerson's No. 1 Smith, Sec. 11-10-8, 2,000 ft. N, NE cor. of irregular Sec. 10, in Sec. 11 ..... S.D. 585 ft.
Dr. H. S. Gerson's No. 2 Smith, Sec. 11-10-8, 200 ft. N and 300 ft. W of NE cor. ..... Location.
Cooper et al's No. 2-A Cooper, C SE SE, Sec. 32-11-10.. S.D. 1,518 ft.
R. A. Keaton's No. 1 Stephens, Sec. 25-10-6, 320 ft. N and W, SE cor. NW NW ..... S.D. 178 ft.
C. M. Talley et al's No. 1 C. M. Talley, 1,980 ft. W, 660 ft. S, NE cor. SE, Sec. 29-11-10..... S.D. 1,380 ft.

OUACHITA PARISH

J. J. Potts, agent's No. 1 Robinson-Reed, Sec. 11-18-4e, 1,745 ft. N, 780 ft. E, SW cor. Sec. ..... Rigging up.
United Gas Public Service Co.'s No. 1 Wiley, Sec. 8-18-5, 660 ft. S and E, NW cor. ..... Coring sandy shale 2,378 ft.
Wilson & Mitchell's No. 1 Williams, Sec. 5-16-1e, 330 ft. E, 240 ft. S, NW cor. SW SE ..... S.D. 1,810 ft.

RED RIVER PARISH

La. Oil Dev. Co.'s No. 3 La. Delta Pecan Co., 2,950 ft. S, 300 ft. E, NW cor., Sec. 27-13-11 ..... Spudded and S.D. 50 ft.

RICHLAND PARISH

National Gas Co.'s No. 1 Singletary, 1,980 ft. N, 660 ft. W, SE cor., Sec. 26-18n-7e ..... S.D. 2,515 ft.

SABINE PARISH

Abney & Davidson's No. 1 Frank Martinez, 330 ft. S and W, NE cor. NW, Sec. 11-7-13 ..... Rigging up.
Baird & Stone's No. 1 McNeely, Sec. 14-7-11..... Derrick.
Beene et al's No. 1 Eisernack, Sec. 2-7-13, 1,070 ft. S, 250 ft. W, NE cor. ..... S.D. for fuel 1,000 ft.
Coates Pet. Co.'s No. 1 Parie, Sec. 3-7-13, 300 ft. S and W, NE cor. NE SE ..... Set 6-in. 2,066 ft; T.D. 2,069 ft.
W. M. Coates' No. 1 Stille, 330 ft. N, 660 ft. W, SE cor., Sec. 35-8-13 ..... Derrick.
B. A. Ferrell's No. 1 Haley, Sec. 6-7-12, 300 ft. S and E, NW cor. NW SW ..... Rigging up.
R. L. Gay, tr.'s No. 1-A Long Bell Lbr. Co., 430 ft. S, 200 ft. W, NE cor. NW NW, Sec. 10-8-13 ..... Coring lime 4,451 ft.
Gehring Oil Co.'s No. 1 Skinner, Sec. 16-8-11, 615 ft. E, 565 ft. S, NW cor. NW ..... S.W. and abd. 2,842 ft.
W. F. Lacey's No. 1 McNeely, Sec. 14-7-11, 250 ft. S and W, NE cor. Sec. ..... Rigging up.
T. M. LeGrand's No. 1 Peterson, 330 ft. N and E of C, Sec. 34-7-13 ..... Arranging to set 6-in. 3,243 ft.
Geo. LeGrand's No. 1 McGough, Sec. 3-8-10..... Derrick.
Loring Oil Co.'s No. 20 Bowman-Hicks, Sec. 4-7-12, 330 ft. S and W, NE cor. NW NW ..... Arranging to set 6-in. 2,425 ft.
J. J. Keen, tr.'s No. 1 Belton (no check), Sec. 31-9-13 .. Drlg. 2,580 ft.
Pelican Nat. Gas Co.'s No. 1 Buckley, Sec. 6-7-10, 330 ft. N and E, SW cor. Sec. ..... Drlg. 1,650 ft.
Rush & French's No. 1 Martinez, Sec. 11-7-13, 330 ft. S, 990 ft. E, NW cor. ..... Set 6-in. 2,066 ft.
Ruston Drlg. Co.'s No. 1 McGehee, Sec. 28-8-12, 330 ft. N and W, SE cor. SW SW ..... Set 6-in. 2,220 ft.
Service Drlg. & Royalties Corp.'s No. 1-B Gardner, Sec. 7-7-10, 330 ft. S and E, NW cor. SW NW .. .... Set 10-in. 102 ft; drlg. 1,200 ft.
J. E. Smitherman's No. 1 Smith, Sec. 7-7-10, 330 ft. S and E, NW cor. NW SW ..... Derrick.
A. H. Thames' No. 1 Edward est., 150 ft. NW SE cor. NE SE, Sec. 3-8-13 ..... S.D. 1,200 ft.
C. H. Tuttle et al's No. 1 Byrd, Sec. 7-7-10, 330 ft. S and E, NW cor. ..... Set 10-in. 100 ft; drlg. 600 ft.

TENSAS PARISH

A. R. Willis et al's No. 1 Currey, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12 ..... S.D. 3,545 ft.

ARKANSAS
COLUMBIA COUNTY

Kendall Oil Co.'s No. 1 Fullenweider, Rhea & Kitchen, Sec. 13-17-22 ..... S.D.; W.O. 814 ft.

CLAY COUNTY

S. C. Jeffus' No. 1 Underwood, 510 ft. N, 350 ft. W, C, NW SE, Sec. 4-20-3 ..... S.D. 1,350 ft.

CLEVELAND COUNTY

Crum & Stillwell's No. 1 E. R. Bell, Sec. 10-10s-12w .... Rigged up and S.D.

CLEBURNE COUNTY
(Cable tools)

Donnelly-Craver et al's No. 1 Donophan Lbr. Co., SE cor. NW, Sec. 33-11-9 ..... S.D. 3,740 ft.

DALLAS COUNTY

J. H. James, tr.'s No. 1 Fordyce Lbr. Co., 200 ft. S, 200 ft. E, NW cor. SE, Sec. 11-9-15 ..... Arranging to resume drlg.
Zepp O. & G. Co.'s No. 3 Hillman, Sec. 20-10-13, 180 ft. N, 450 ft. E, SW cor. NW NE ..... Location.

DREW COUNTY

Co-Operative Dev. Co.'s No. 1 Ogles, Sec. 35-15-5, 330 ft. S and E, NW cor. NE NW ..... S.D. 1,890 ft.

HOT SPRINGS COUNTY

Star Oil Co.'s No. 1 Cunningham, 285 ft. S, 285 ft. W, NE cor., Sec. 11-5-16 ..... S.D. 1,300 ft.

LINCOLN COUNTY

Lawrence Cook, tr.'s No. 1 McGhee Planting Co., 420 ft. S, 200 ft. W, NE cor. NE SW, Sec. 5-8-7 ..... S.D. 2,800 ft.

LITTLE RIVER COUNTY

Roberts Oil Co.'s No. 1 H. J. Russell, 330 ft. E, 330 ft. S, NW cor., Sec. 25-12-19 ..... Location.
Stephens et al's No. 1 Dierke Lbr. Co., Sec. 29-12s-21w, 150 ft. S, 330 ft. E, NW cor. NE NW..... Drlg. lime 2,551 ft.

LOGAN COUNTY

J. H. Flowers' No. 1 J. H. White, Sec. 13-6-26..... S.D.; W.O. 3,570 ft.

MILLER COUNTY

W. E. Noel et al's No. 1 Dickson hrs., 1,980 ft. W, 660 ft. S, NE cor., Sec. 11-20-27..... S.D. 1,955 ft.

OUACHITA COUNTY

Copenhaven et al's No. 2 Berg, C SE SE, Sec. 13-15-17.. S.D. 2,011 ft.

PIKE COUNTY

E. R. Henderson's No. 1 Tilyou, 660 ft. W, 500 ft. S, NE cor. NE SE, Sec. 26-8-14..... T.A. 2,909 ft.
E. R. Henderson's No. 1 J. L. Lee, 400 ft. S, 350 ft. E, NW cor. SW SE, Sec. 21-8-24..... S.D.; W.O. 1,020 ft.
E. R. Henderson's No. 1 W. B. East, 200 ft. S, 150 ft. W, NE cor., Sec. 13-9-23..... S.D. 338 ft.

PRAIRIE COUNTY

Powell Creek O. & G. Co.'s No. 1 Kloss, NE SW, Sec. 3-4n-6w ..... Partly rigged up and S.D.

SCOTT COUNTY

Heavener O. & G. Co.'s No. 1 Riser, Sec. 36-4-26 ..... S.D.; T.D. 1,426 ft.
Waldron O. & G. Co.'s No. 1 White, NE cor. SW NW, Sec. 17-3n-29 ..... S.D. 1,860 ft.

SEVIER COUNTY

Tristate Oil Co.'s No. 1 Grimble, Sec. 34-8-22, S½ SW... S.D. 950 ft.

UNION COUNTY

Drillers Oil & Dev. Co.'s No. 1 Pickering, 220 ft. N, 668 ft. E, SW cor. NW NE, Sec. 1-17-16..... Cutting liner with ripper 3,134 ft.
H. H. Helms' No. 1 C. H. Murphy, NE cor. NW NE, Sec. 31-16-14 ..... Drlg. shale 1,550 ft.
L. M. Hill et al's No. 1 J. W. Barnes, Sec. 21-19-16, NE cor. Sec. ..... Derrick.

Sunby et al's No. 2 Perdue, Sec. 33-16-14, 75 ft. S, 150 ft. E, NW cor. Sec. ..... W.O. 3,247 ft.

WASHINGTON COUNTY
(Cable tools)

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 ..... S.D. for funds 1,795 ft.

YELL COUNTY
(Cable tools)

Tegmeir & Luckett's No. 1 Falcon, Sec. 36-7-21..... S.D. 5,710 ft.

EAST TEXAS
BOWIE COUNTY

Logan & Elliott's No. 1 Smith, 9,600 ft. S, 2,500 ft. W, NE cor. Chas. Lewis Sur. ..... S.D. 4,505 ft.

Tarkington & Jones' No. 1 W. W. Whybark, 200 ft. S, 200 ft. W, SW cor. J. H. Dyer Sur. ..... S.D. 1,880 ft.

Lee Timberlake et al's No. 2 Tidwell, 2,510 ft. N, 655 ft. W, SE cor. T. M. Rice Sur. ..... S.D. 3,000 ft.

CAMP COUNTY

McDonald Bros.' No. 1 Tillery, 150 ft. E, 450 ft. S, NW cor. 127-ac. tr. in J. H. Murphy Sur. ..... Abd. 3,000 ft.

CASS COUNTY

J. F. Morrisey's No. 1 T. J. Wilson, 1,088 ft. S of N line, 2,376 ft. E of W line of H.R.S., J. R. McFarland Sur. ..... S.D. 3,670 ft.

Davis & Pigg's No. 1 Roy Bryan, SW cor. Roy Bryan 88-ac. tr., Albert H. Latimer Sur. ..... S.D. 2,860 ft.

C. E. Murdock's No. 1 First National Bank, Evans Watson Sur. ..... S.D. 4,390 ft.

John C. Rogers' No. 1 I. E. Lanier, 573 ft. N, 379 ft. W, SE cor. Lanier 86 ac. in K. E. Welborn Sur. ..... S.D. 2,280 ft.

Olds & King's No. 2 Anthony, John C. Byers Sur. ..... S.D. 1,750 ft.

John C. Rogers et al's No. 1 W. Q. Henderson, 3,100 ft. S, 3,100 ft. E, NW cor., Wm. Davis Sur. ..... S.D. 955 ft.

HARRISON COUNTY

Lloyd Oil Corp.'s No. 1 E. S. Timmons, 150 ft. from N line to 250 ft. from E line of 105-ac. tr., Findley Sur. ..... S.D. 4,195 ft.

Ryan Cons. Pet. Corp.'s No. 1 J. M. Fuhr, 1,300 ft. N of NW cor. T. J. Copelin Sur., 1,675 ft. SW at right angles to NW SE line of O'Neal Sur. ..... Derrick.

MARION COUNTY

Geo. Hindeman et al's No. 1 F. V. Lindsey, 2,500 ft. S, most northerly N line, 3,555 ft. E most easterly W line, Alexander Albright Sur. ..... S.D. 2,380 ft.

PANOLA COUNTY

Hoffer et al's No. 1 Cameron Lbr. Co., center 1,306-ac. tr. in W. M. A. LaGrove Sur. ..... Derrick.

Moses & Wallace's No. 1 Daniel, 600 ft. N and W lines, Mrs. Gerrell 100-ac. tr., SW cor. Isabel Hanks Sur... Spudded and S.D.

G. A. Davidson's No. 1 Latham, Wm. Rich Sur. ..... S.D. 2,394 ft.

J. L. Nelson et al's No. 1 J. W. Williams, 300 ft. S, 700 ft. W, NE cor. Williams' 67-ac. tr. in James Hanks Sur. ..... S.D. 3,055 ft; lime and shale.

United Gas Public Service Co.'s No. 11 Werner, 1,162 ft. N, 2,418 ft. W, SE cor. D. B. Lewis Sur. ..... Plugged back to 3,650 ft. and testing at 3,665 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossler, E. Hughhart Sur. .... S.D. 2,795 ft.

Johnson Pet. Co.'s No. 2 Randolph, Edw. Dean Sur. .... S.D. 2,280 ft.

SHELBY COUNTY

Chapperell Oil Co.'s No. 2 Holt, Matthew Moore Sur. ... Reaming 1,850 ft.

Harry Elliott's No. 1 Pickering Lbr. Co., 1,000 ft. N, 150 ft. E, SW cor. 361-ac. tr., G. H. Patterson Sur... S.D. 500 ft.

K. H. Francis' No. 1 John Mims, Mary Smith Sur. ..... S.D. 3,334 ft.

H. H. Gracey's No. 1 J. A. Morrison, 1,500 ft. N, 200 ft. E, SW cor. J. A. Morris' 109-ac. tr., Wm. English Sur. ..... S.D. 2,600 ft.

Henry Maulding's No. 1 Frost Lbr. Co., NE cor. Frost Lbr. Co.'s 80-ac. tr., A. D. Fountain Sur. ..... S.D. 3,246 ft.

McRoby et al's No. 1 Windham, Wm. Leach Sur., on Windham 256-ac. tr. ..... S.D. high wtr. 3,393 ft.

Ridgeway et al's No. 1 Polley, Dominguez Gonzales Sur., 3,180 ft. E of SW cor., 160 ft. N at right angles of Polley 457-ac. tr. ..... Set 8-in. 822 ft.

C. H. Tautenhahn's No. 1 J. C. Bogard, 300 ft. S, 900 ft. E, NW cor. J. C. Bogard's 52-ac. tr., Thomas Baker Sur. ..... S.D. 20 ft.

Tenant et al's No. 1 J. Henry, C. Z. Walker Sur. ..... S.D. 3,457 ft.

United North & South Prod. Co.'s No. 1 Windham, 300 ft. W, 1,050 ft. N, SE cor. of Windham 171.5-ac. tr. on A. H. English Sur. ..... S.D.; W.O. 3,391 ft.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 39)

W. M. Cates' No. 1 Bowman-Hicks, 330 ft. S and W, of C, Sec. 3-7-12 ..... W.O.S.R. 2,441 ft.

Crescent Drlg. Co.'s No. 2 Byrd, Sec. 12-7-11, 330 ft. S and W, NE cor. NW NE ..... Set 10-in. 105 ft; drlg. 1,300 ft.

O. A. Gautier et al's No. 1 Mischell, 330 ft. E, 150 ft. N, SW cor. SE NW, Sec. 30-8-12 ..... S.D; W.O. 2,599 ft.

Hawkins & Antoon's No. 1 Newton, Sec. 1-7-11 ..... W.O.S.R. 2,609 ft.

Lionel Hawkins' No. 1 Byrd, Sec. 1-7-11, 330 ft. N and W, SE cor. SE NW ..... Location.

Hudson & Bird's No. 1 Walden, 480 ft. N, 300 ft. E, SW cor. SW NE, Sec. 26-8-11 ..... S.D. 2,454 ft.

Zeke Lohman's No. 1 McCormick, 660 ft. E, 330 ft. N, SW cor. NE SW, Sec. 2-7-11 ..... S.D. 1,606 ft.

Loring Oil Co.'s No. 18 Bowman-Hicks, 1,280 ft. S, 275 ft. E, NW cor. SW NW, Sec. 15-7-12 ..... Waiting on cmt. to set; T.D. 4,428 ft.

L. K. McGuffin's No. 1 Bush, NW cor. NW SE, Sec. 1-7-11 ..... W.O.S.R. 2,493 ft.

Ben Merritt, tr.'s No. 2 Byrd, Sec. 1-7-11 ..... S.D. 2,480 ft.

Ohio Oil Co.'s No. 11 Bowman-Hicks, Sec. 2-7-11, 330 ft. N, 990 ft. E, SW cor. NW ..... Bailed dry 2,600 ft; S.D; W.O.

H. W. Perritt's No. 6 Bowman-Hicks, Sec. 2-7-12, 150 ft. S and W, NE cor. SE NE ..... Completed; pumping 20 bbls. 2,317 ft.

Eddie Self's No. 3 Jacobs, Sec. 1-7-11, 150 ft. N and E, SW cor. SE SE ..... Rigging up.

ARKANSAS
UNION COUNTY—EL DORADO

Ark. O. & G. Co.'s No. 4 Anderson, Sec. 31-17-15, 2,005 ft. S, 150 ft. W, NE cor. NW SW ..... Drlg. in with cable tools 2,179 ft.

Lion O. & R. Co.'s No. 9-A G. P. Hayes, 242 ft. S, 246 ft. W, NE cor. Lot 5, NE, Sec. 4-16-15 ..... S.D. high wtr.; 7,255 ft.

Southern Prod. Co.'s No. 1 Wingfield, NE cor. SE NW, Sec. 16-19-15 ..... S.D. 2,608 ft.

UNION COUNTY—URBANA

Marine Oil Co.'s No. 1 Winn est., 330 ft. S and E, NE cor. S½ NW, Sec. 11-18-13 ..... T.A. 3,586 ft.

Marine Oil Co.'s No. 2-E Thompson, 330 ft. N, 330 ft. E, SW cor. NE NE, Sec. 10-18-13 ..... Location.

Wilson & Chapman's No. 1-B Hadley, Sec. 3-18-13, 330 ft. S and W, NE cor. SE NW ..... Waiting on 6-in. csg. 3,542 ft.

EAST TEXAS
PANOLA COUNTY

Daisy O. & G. Co.'s No. 1 Rucks, John Palmer Sur. .... S.D. 3,194 ft.

Nat. Gas Prod. Co.'s No. 3 Mays, 155 ft. S, 443 ft. W, NE cor. 42.5-ac. tr., Jane Thorpe Sur. ..... Drlg. 3,000 ft.

United Prod. Corp.'s No. 17 Steele, 1,320 ft. N, 660 ft. W, SE cor. C. D. Steele lse., in B. C. Jordan Sur. .. Location.

MISSISSIPPI
HINDS COUNTY

Love Pet. Co.'s No. 1 Interior Lbr. Co., Sec. 2-5n-1e, 90 ft. W, 270 ft. N, SE cor. SW ..... Derrick.

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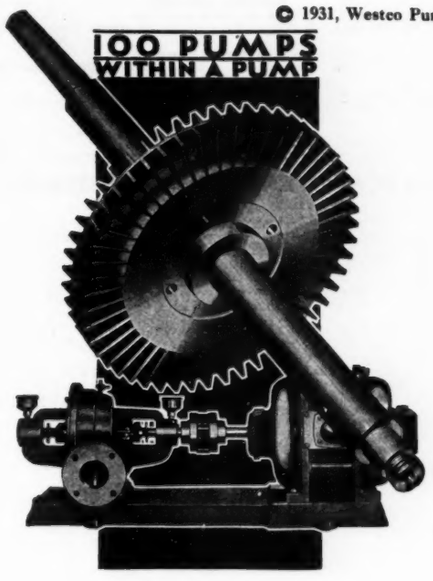

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SINGLE STAGE—HIGH PRESSURE

RANKIN COUNTY

James Alexander, tr.'s No. 1 Hurst, Sec. 12-6n-1e, 200 ft. N, 700 ft. W, SE cor. NE NE ..... Completed for 50,000,000 ft. gas 2,348 ft.

Anderson et al's No. 1 Casey & Wellon, Sec. 11-5n-1e, 656 ft. N and W, SE cor. Sec. ..... Completed for 40,000,000 ft. gas 2,402 ft.

Cummins & Montgomery's No. 1 Ivey, Sec. 13-5n-1e, NE Lot 10, Blk. D, E. Jackson Pt., First Addn. ... Derrick.

Meredith et al's No. 1 Strowder, Sec. 12-5n-1e, SE cor. SW NE ..... Derrick.

WILDCAT OPERATIONS IN MISSISSIPPI

HINDS COUNTY

Company, farm and location—	Remarks:
Atkins et al's No. 1 Crane Lawrence, Sec. 23-6n-1e, 300 ft. E, 132 ft. N, SW cor. NE SE	Derrick.
Consumers O. & G. Co.'s No. 1 Interior Lbr. Co., 805 ft. E, 205 ft. N, SW cor., Sec. 1-5n-1e	Set 6-in. 2,405 ft.
Howard Oil Co.'s No. 1 Jackson College, C NW NW, Sec. 9-5-1e	Abd. 340 ft.
Miss.-Minn. Oil Co.'s No. 1 Edwards Land Co., Sec. 23-6n-4w, 1,200 ft. N and E from center of Sec.	Derrick.
Ridgeway & McGehee, Inc.'s No. 1 Mosal, Sec. 24-6n-1e, 200 ft. N, 100 ft. E, SW cor. of E½ SW	Set 6⅝-in. 2,454 ft.
Roell O. & G. Co.'s No. 1 Dreyfuss, 650 ft. N, 480 ft. W, SE cor. NE, Sec. 4-5n-1e	Set 6-in. 2,451 ft.
Southern Pet. Co.'s No. 1 Wilton (was Tri-State O. & G. Co.'s), 320 ft. E, 240 ft. N, SW cor. SE NE, Sec. 28-6-1e	Waiting orders 2,498 ft.
F. E. Stewart et al's No. 1 Miss. Cotton Seed Products Co., Sec. 4-5n-1e, 320 ft. S, 440 ft. W, NE cor. SE	Derrick abd.

JASPER COUNTY

Bay Springs Pet. Co.'s No. 1 Keyes, C NW NE, Sec. 2-12-9	S.D. for fuel 3,139 ft.

LOWNDES COUNTY

Lowndes County Oil & Dev. Co.'s No. 1 Carr est., Sec. 34-17-16e, 1,320 ft. E, 330 ft. S, NW cor. Sec.	Rig on location.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bourland, Sec. 2-13-19	S.D. 3,015 ft.
McAlpine et al's No. 1 Cowart, second hole, Sec. 2-12-19	T.A. 3,793 ft.

NEWTON COUNTY

Bob Dalton's No. 1 Majure, 400 ft. N, 300 ft. E, SW cor. SE, Sec. 28-6n-11e	S.D. 840 ft.

NOXUBEE COUNTY

Thompson & Donohue's No. 1 Donohue, Sec. 25-16n-17e	S.D. 1,735 ft.

RANKIN COUNTY

Attkisson & Dyer's No. 1 Valentour, 200 ft. S, 200 ft. E, NW cor., Sec. 18-5n-2e	Waiting on csg. 2,428 ft.
Majestic O. & G. Co.'s No. 1 Elton Lbr. Co., Sec. 10-4n-3e.	Derrick.

SCOTT COUNTY

M. U. Culley et al's No. 1 Owens, Sec. 2-8-9	Derrick.

SHARKEY COUNTY

United Gas Public Service Co.'s No. 1 Lenhart, Sec. 14-14n-6w, 660 ft. N of C of S line of Sec.	Location.

WARREN COUNTY

Eagle Bend O. & G. Co.'s No. 1 Kiger, SW cor. SW SE, Sec. 9-18-2	S.D. 2,607 ft.

SOUTHWEST TEXAS PROVEN AREAS

(Continued from Page 40)

SALT FLATS POOL—CALDWELL COUNTY

Joe Bruner's No. 1 Malone, 150 ft. to N line, 750 ft. to W line of tr., A. Floyd Sur. ..... T.D. 2,704 ft.; drlg.

John Storey's No. 1 Dickerson, 150 ft. to N of center of S line of tract, John R. Rains Sur. ..... Rigging up.

GOVERNMENT WELLS POOL—DUVAL COUNTY

Duval Oil Corp.'s No. 7 Bishop Cattle Co., 1,319 ft. to W line, 1,666 ft. to N line, Sur. No. 135 ..... T.D. 2,360 ft.; pulling liner to be deepened.

Magnolia Petroleum Co.'s No. 7 Wilson, 1,340 ft. to W line, 1,150 ft. to N line of Sur. No. 134 ..... T.D. 3,295 ft.; abnd. lost returns.

Thomas & Tarver, Inc.'s No. 5 Bishop Cattle Co., 825 ft. to W line, 1,668 ft. to S line, Sur. No. 135 ..... Rigging up.

RANDADO POOL—DUVAL COUNTY

O. W. Killam's No. 1 Hinnant, 150 ft. N of NE cor. of Sur. No. 84 in Sur. No. 514 ..... Rigging up.

WEST COLE POOL—DUVAL COUNTY

Cole Petroleum Co.'s No. 75 Benavides, 365 ft. from NE line, 150 ft. from NW line, Blk. 8, Sec. 18, Mariana Arispe grant ..... T.D. 1,100 ft.; drlg.

French Oil Corp.'s No. 5 Benavides, 1,602 ft. from N line, 150 ft. from W line of Sur. 659 ..... T.D. 100 ft.; drlg.

DARST CREEK POOL—GUADALUPE COUNTY

Humble Oil & Ref. Co.'s No. 3 Dan Denman, 385 ft. E, 150 ft. N of SW of 200-ac. tract in Wm. Arrington Sur. ..... 2,369 ft.; drlg.

SLICK POOL—GOLIAD COUNTY

C. R. M. and H. H. Weinert's No. 1 Stopke, 660 ft. from S and W lines ..... T.D. 3,430 ft.; drlg.

LUCAS POOL—LIVE OAK COUNTY

Houston Oil Co.'s No. 14 Cartwright, 1,000 ft. W of No. 23 Cartwright ..... T.D. 5,400 ft.; standing.

Houston Oil Co.'s No. 24 Cartwright, 784 ft. N of No. 4, J. M. Colchado Sur. ..... T.D. 5,300 ft.; drlg.

CHITTIM POOL—MAVERICK COUNTY

Texas Gas Utilities' No. 8 Chittim, 24 ft. S of No. 7 Chittim ..... T.D. 4,859 ft.; standing.

SAXET FIELD—NUECES COUNTY

Gulf Coast Oil Co.'s No. 1 Sagarin ..... T.D. 3,100 ft.; drlg.

Gulf Coast Oil Co.'s No. 1 Elder, NW of same company's No. 1 Harrell ..... T.D. 5,070 ft.; standing.

Gulf Coast Oil Co.'s No. 2 Sedwick, east offset to company's No. 1 Harrell ..... Making location.

Gulf Coast Oil Co.'s No. 3 Sedwick, east offset to Houston Oil Co.'s No. 1-B Maggie Harrell ..... Making location.

Neal, Milton & Kepley's No. 2 Roark ..... Making location.

Saxet Oil Co.'s No. 3 Donigan, north offset to Zoch's No. 1 Baldwin ..... Location.

Saxet Oil Co.'s No. 5 Well, 3,041 ft. to N line, 333 ft. to W line ..... Drlg. 2,495 ft.

Saxet Oil Co.'s No. 6 Dunn, 660 ft. S of No. 5 Dunn, 4 miles W from Corpus Christi ..... T.D. 4,304 ft.; rigging up to deepen.

LOS OLMOS POOL—STARR COUNTY

Rio Oil & Gas Co.'s No. 1 Kelsey-Base (formerly carried as Los Olmos Oil & Ref. Co.'s No. 1 Kelsey-Bass) ..... T.D. 910 ft.; drlg.

Rio Oil & Gas Co.'s No. 3 Kelsey-Bass, No. 6 Subd., Porciones 75, 76, 77 ..... Rigging up.

San Marcos Oil Co.'s No. 3 Ivey, 450 ft. W of No. 2 ..... T.D. 423 ft.; drlg.

Suttie & Rutherford's No. 1 Kelsey-Bass, Subd. No. 9, Porciones 75, 76, 77 ..... Rigging up.

CAROLINA-TEXAS POOL—WEBB COUNTY

Magnolia Pet. Co.'s No. 6 Benavides, 1,630 ft. to N line, 150 ft. to E line of Sur. No. 660 ..... Rigging up.

Usher Carson's No. 4-D Webster, 150 ft. to S and W lines of NE quarter, Sur. 634 ..... T.D. 2,052 ft.; set csg.

ESCOBAS POOL—ZAPATA COUNTY

F. M. Blair & Son's No. 1 Montemayor, 450 ft. to N, 150 ft. to E line of Blk. No. 1, Sur. No. 62 ..... Rigging.

Brogan & Belcher's No. 1 M. Garza, 150 ft. to NE and SE lines, Blk. 62, C. A. Couglas Subd. of Zorro Ranch, Comitas grant ..... Spudded in.

Daniels & Hill's No. 1 Montemayer, 150 ft. from S and W lines of Blk. 7, Sur. 64 ..... T.D. 1,315 ft.; tested oil, set csg.

F. H. Etheridge's No. 5 Bustamente, 1,540 ft. from NE line, 150 ft. from NW line of Sun 80-ac. lease, Share 35, Fansler's Partition, Comitas grant ..... Location.

F. H. Etheridge's No. 6 Bustamente, 150 ft. to SW line, 150 ft. to NW line of Sun's 80-acre lease, Share 35, Fansler Partition, Comitas grant ..... T.D. 500 ft.; drlg.

Grayburg Oil Co.'s No. 1 F. G. Martinez, 150 ft. from S and W lines of 240-ac. tract in E¼ of Sur. 4 ..... T.D. 2,118 ft.; standing.

O. W. Killam's No. 17 Bustamente, 260 ft. from SW line, 250 ft. from SE lines Share 5, Fansler Subd., Comitas grant ..... T.D. 500 ft.; drlg.

O. W. Killam's No. 18 Bustamente, Share 5, Fansler Partition, Comitas grant ..... Location.

O. W. Killam's No. 3 Medina (Bustamente), 150 ft. to NW and NE lines, Share 34, Fansler Partition, Comitas grant ..... Rigging up.

Pray & Chamberlain's No. 4 Garza, Blk. 1, Comitas grant ..... 1,100 ft.; drlg.

Trevino Oil Corp.'s No. 15-A Trevino, 150 ft. to S and W lines, Blk. 15, Sur. No. 412 ..... T.D. 1,200 ft.; drlg.

Winch & Billings' No. 1 Jose Bustamente, 150 ft. to NW and SW lines of Pal-Mar 31-ac. tract, Share 35, Fansler Partition, Comitas grant ..... T.D. 1,326 ft.; rigging up to deepen.

Winch & Billings' No. 7 Jose Bustamente, 1,574 ft. from tract, Share 35, Fansler Partition, Comitas grant.... NE line, 150 ft. from NW line of 31-ac. Pal-Mar T.D. 500 ft.; drlg.

CHARCO-REDONDO POOL—ZAPATA COUNTY

Bob & Richey's No. 28 Martinez, 990 ft. from SW line, 615 ft. from SE line, Blk. 24, Duke Subd., Charco Redondo grant ..... Location.

Bob & Richey's No. 29 Martinez, 810 ft. from SW line, 360 ft. from SE line of Blk. 24, W. R. Duke Subd., Charco Redondo grant ..... Location.

MARTINEZ POOL—ZAPATA COUNTY

F. H. Etheridge's No. 2 Winch & Henne, 1,100 ft. to W line, 520 ft. to S line, Sur. No. 286 ..... Location.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 40)

BEE COUNTY

Alexander et al's No. 1 McFall, 3 miles S Skidmore ..... T.D. 2,100 ft.; standing.

Humble O. & R. Co.'s No. 1 Laura Thompson, 6,360 ft. from N line, 15,100 ft. from W line of tr. in Garrett Roache Sur., S part of county ..... T.D. 5,148 ft.; drlg.

BEXAR COUNTY

Amsden-Ingersoll-Miller's No. 1 Strumberg, 450 ft. to W line, 1,020 ft. to N line of tract, 12 miles SW of San Antonio ..... T.D. 710 ft.; drlg.

Alamo Natural Gas Co.'s No. 2 Gembler, 1,000 ft. S of No. 1 in A. Manchaco Sur. No. 51 ..... Drlg.

J. E. Anderson's No. 1 Suburban Irrigated Farms, 500 ft. to N line, 600 ft. to E line of C. Logan Sur. ..... T.D. 1,773 ft.; S.D.

Eckert et al's No. 1 Edwards, 150 ft. to N and W lines of farm in Martinez Sur. ..... T.D. 110 ft.; resumed drlg.

Callahan Final Oil Co.'s No. 1 B. H. Buck, 900 ft. to E line, 3,200 ft. to S line of farm, in J. M. McGamley Sur. ..... T.D. 650 ft.; drlg.

Dr. Ewell Neil's No. 1 J. Watson, 500 ft. from W line, 1,700 ft. from S line of B. Martinez Sur. ..... T.D. 2,250 ft.; no report.

Jones & Voltz' No. 6 Bonkowsky ..... T.D. 650 ft.; drlg.

O. K. Oil Co.'s No. 1 Strum, 150 ft. S of N line, 150 ft. W of E line, John Grant Sur. ..... Drlg.

O. K. Oil Co.'s No. 2 Strum, 150 ft. from S line, 1,051 ft. W of E line, Juan Mantes Sur. ..... Drlg.

Schneider, Rees et al's No. 2 Claussen, 12 miles NE of San Antonio ..... T.D. 1,150 ft.; S.D.

W. R. Swearingen et al's No. 7 Halberdier, 150 ft. W of E line, 540 ft. S of N line, J. M. Perez Sur. ..... T.D. 800 ft.; drlg.

Tri-State Oil Co.'s No. 1 E. B. Carruth, 2,500 ft. from S line, 2,560 ft. from E line of tr. in F. Bolen Sur.... T.D. 780 ft.; standing 600 ft. in oil.

S. W. Blount's No. 1 S. A. Land Co., I. Perez Sur., 1,000 ft. to N line, 450 ft. to W line of tract ..... T.D. 500 ft.; S.D.

Van Duyn et al's No. 1 Bradden, 5,000 ft. N of Medina River, 350 ft. to E line of tract, 8 miles W of San Antonio ..... T.D. 785 ft.; drlg.

CALDWELL COUNTY

Cole & Moseley's No. 1 Pierce, 150 ft. to NW and SW lines of tract, Solomon Seal Sur. ..... Spudded in.

Meyer's No. 1 G. C. and W. Walker, Solomon Seal Sur... Moving in rig.

M. O. Rayor's No. 3 N. L. Dunlop, 350 ft. to NW line, 150 ft. to NE line of farm, Solomon Seal Sur. ..... T.D. 2,503 ft.; plugged back to Buda.

Charles H. Wagener's No. 1 Rodenberg ..... Location.

DUVAL COUNTY

Frank Gravis et al's No. 2 Schallert, 425 ft. to E line, 150 ft. to S line of Blk. 10, Cain & Smith Subd. "A", Sur. No. 255 ..... T.D. 860 ft.; drlg.

O. W. Killam's No. 1 Sutherland, Sur. No. 7, 3,200 ft. to E line, 150 ft. to N line ..... T.D. 1,750 ft.; drlg.

O. W. Killam's No. 1 Peters, 150 ft. from E line, 450 ft. from N line of SE of Sur. No. 1 ..... Derrick.

Thomas & Tarver, Inc.'s No. 1 Wood-Welder, 500 ft. to N line, 4,320 ft. to W line of Sur. No. 102 ..... T.D. 2,300 ft.; standing.

R. A. Thompson's No. 1 Parr, 2,640 ft to W line, 12,160 ft. to S line of San Andres grant ..... Location, spudded in.

Vacuum Oil Co.'s No. 1 Duval Land Co., 250 ft. from S and E lines of Sur. 96 ..... Spudded in.

FRIO COUNTY

A. H. Wray's No. 1 Roche, 320 ft. from N and W lines of NW SE Sec. 123, A. Hutzler Sur. ..... T.D. 3,630 ft.; drlg.

GUADALUPE COUNTY

Barnhill et al's No. 1 H. L. Hoffman, 450 ft. to N and W lines of farm, in John G. King Sur. ..... T.D. 850 ft.; S.D.

M. W. Eiser's No. 1 Wells, 2,790 ft. to W line, 150 ft. to S line of farm in Jose de la Baume Sur. ..... T.D. 3,660 ft.; drlg.

J. M. Scott's No. 1 E. Drumm, 250 ft. to W line, 150 ft. to S line of tract, C. Campbell Sur. ..... T.D. 900 ft.; abnd.

GOLIAD COUNTY

Camp & Stanolind's No. 2 Pettus, 2,438 ft. N, 74 deg. E of No. 2 ..... T.D. 4,492 ft.; drlg.

Plymouth Oil Co.'s No. 1 Parks, 5 miles NE Goliad ..... T.D. 4,625 ft.; recementing.

Neal et al's No. 1 J. M. Pettus, 10,700 ft. to S line, 2,500 ft. to E line of Pedro Trevino Sur. ..... T.D. 4,000 ft.; S.D.

GONZALES COUNTY

Crowder Oil Co.'s No. 1 Preston, 1,000 ft. from W line, 2,000 ft. from N line of W. W. Pace Sur. ..... Spudded in and S.D.

Johnson & Mattock's No. 1 J. James, 12 miles NE of Gonsales city, 900 varas from E line, 300 ft. from S line of tract in M. A. Williams Sur. ..... Location.

HIDALGO COUNTY

Barrett-Kanellos' No. 1 J. B. Brock, 7 miles W and N from Mission (on Monte Cristo road) ..... T.D. 875 ft.; drlg.

Davenport et al's No. 1 Wells, 30 miles W of Mission... Moving in rig.

LaJoya Oil & Gas Co.'s No. 1 W. L. Hart, 6 miles W from Mission, north of San Fordyce ..... T.D. 1,600 ft.; drlg.

Dayle L. Smith's No. 1, 18 miles W from Edinburg ..... T.D. 4,026 ft.; standing, showing gas.

San Roman Oil Co.'s No. 1 J. T. Lomax, 7,500 ft. from S and E lines of San Roman Sur. ..... Location.
Dayle L. Smith's No. 3 Daskam, SW part of county..... Spudded in.

JIM HOGG COUNTY

L. W. Connor's No. 1 Holbien, 150 ft. from N and E lines of Blk. 7, Sur. 7, Holbien Subd. of Las Animas grant ..... T.D. 110 ft.; drlg.
R. F. Force's No. 1 Holbien, 150 ft. from N and W lines of Blk. 54, Sur. 9, Holbien Subd. of Las Animas grant ..... T.D. 1,600 ft.; drlg.
T. P. Morgan's No. 1 fee, 2,223 ft. to N line, 1,640 ft. to E line of Share 19, Palo Blanco grant ..... T.D. 620 ft.; S.D. to drill wtr. well.

JIM WELLS COUNTY

Gulf Prod. Co.'s No. 5 Shaeffer, SE cor. of Sur. No. 89... T.D. 2,000 ft.; drlg.
Vacuum Oil Co.'s No. 1 Seeligson, 4,500 ft. to W line, 75,000 ft. to S line of Los Jaboncillos Sur. ..... T.D. 2,900 ft.; drlg.

KARNES COUNTY

A. E. Edmiston's No. 1 O. L. Cochran, 150 ft. from S line, 500 ft. from E line of farm in D. B. McConnell Sur. ..... T.D. 1,625 ft.; drlg.
V. F. Neuhaus' No. 1 Della B. Tips, 1,050 ft. from SE line, 960 ft. from SW line of 1,037.5 ac., Carlos Martinez Sur., 5 miles SE of Kennedy ..... 2,275 ft.; drlg.

KENDALL COUNTY

Dixon Oil Co.'s No. 1 Ottmar Behr, 823 ft. from S and N lines of Jessie Wilson Sur., 3 miles S of Sisterdale ..... T.D. 2,703 ft.; standing.
Fred S. Dibble's No. 1 Eilebrach, Sur. 77, N part of county ..... T.D. 50 ft.; S.D.

KERR COUNTY

Evans & Gant's No. 1 E. Young, A. E. Burge Sur. No. 28. T.D. 1,312 ft.; standing.
Evans & Gant's No. 2 Love, 150 ft. S and W line of Sur. 1,593 ..... T.D. 5,849 ft.; pulling csg. to deepen.
Verde Oil & Gas Co.'s No. 1 J. D. Witt, 1,320 ft. from N line, 1,320 ft. from W line of Sec. 1,923, Hamilton Sur., 4 miles S from Center Point. T.D. 200 ft. Carried to this depth and abandoned as Herber Oil Co.'s No. 1 J. D. Witt ..... Rigging up to deepen to 4,500 ft.

LA SALLE COUNTY

Buckley Ranch O. & G. Co.'s No. 1 Buckley, 200 ft. from S line, 330 ft. from W line of Sur. No. 37 ..... T.D. 5,200 ft.; drlg.

LIVE OAK COUNTY

J. A. Harper's No. 1 fee, 2,130 ft. to N line, 510 ft. to E line of farm, J. Pointevant Sur. No. 37 ..... Rigging up.
Henderson Coquat's No. 1 Hewitt ..... T.D. 1,785 ft.; S.D.
Phillips Petroleum and Henderson Coquat's No. 1 Sanger, 150 ft. to most S of N lines, 2,000 ft. to W line of tract ..... T.D. 4,007 ft.; abnd.
Texas Prod. Co.'s No. 1 Two Rivers Ranch, 3,700 ft. SW of NW cor. of Ely Jurdan Sur. and 43,000 ft. SE at right angles ..... T.D. 1,000 ft.; drlg.

LEE COUNTY

Henderson & Holden's No. 1 Dismuke, 600 ft. to E line, 150 ft. to N line of farm, J. Maxmillan Sur. ..... Rigging up.
A. H. Wheeler and associates' No. 1 fee, Blk. 47, H. Donohue Sur. ..... T.D. 3,890 ft.; S.D.
C. B. Polk et al's No. 1 Stoltz, Hiram Donohue Sur. ... T.D. 2,300 ft.; S.D.
Chadwick et al's No. 1 Hickey, 1,000 ft. to NW line, 300 ft. to NE line of farm in Varreiman Sur. ..... T.D. 20 ft.; spudded in.
Washington-Lee Oil Co.'s No. 1 L. Hicket, 1,100 ft. from N line, 200 ft. from E line of tract in J. D. Varreiman Sur. ..... Location.

McMULLEN COUNTY

Jacob, Buzzini & Pickett's No. 1 Brewer, 750 ft. NE of Pickett's No. 1 Nelson ..... Location.

MAVERICK COUNTY

I. N. Boicourt's No. 1 Bandera, School Land ..... T.D. 2,284 ft.; standing.

MEDINA COUNTY

Frank A. Brown's No. 1 Fohn, 150 ft. from E line, 790 ft. from N line of J. F. Torry Sur. No. 113 ..... T.D. 922 ft.; twisted off drill stem, fishing.
C. J. Webster Oil & Gas Co.'s No. 1 Adams, 2,450 ft. to N line, 160 ft. to E line of Jos. Hillemeyer's No. 25. T.D. 2,550 ft.; drlg.

MILAM COUNTY

H. W. Elliott's No. 1 Marek, 767 ft. from N line, 500 ft. from W line of 160-ac. tr. in B. Wickson Sur. ..... T.D. 1,456 ft.; S.D.
Nowlen's No. 1 Beard, 1,350 ft. from SE line, 450 ft. from SW line of farm, in J. F. Guthrie Sur., 4 miles S Thorndale ..... T.D. 2,036 ft.; S.D.
Red Bank Oil Co.'s No. 2-A J. A. Foster, 5,243 ft. to SW line, 150 ft. to NW line of farm ..... T.D. 4,927 ft.; drlg.

NUECES COUNTY

C. E. McCarthy's No. 1, W of Corpus Christi ..... Making location.
Southern Crude Oil Pur. Co.'s No. 1 Chas. E. Stratton, 1,650 ft. E line, 330 ft. S line of P. Sancho Sur..... T.D. 4,825 ft.; drlg.

REAL COUNTY

McGinley Corp.'s No. 1 Haby, C of SW, Sec. 175 ..... T.D. 2,530 ft.; S.D.

SAN PATRICIO COUNTY

John F. Camp's No. 1 Jackson, SW cor. of SW Sec. 30, 3 miles N from Edroy ..... Derrick; contract to 4,750 ft.

STARR COUNTY

R. E. Johnson's No. 1 Goodrich, 1,214 ft. from N line 1,065 ft. from W line of tract, 1¼ miles N of Rio Grande City ..... T.D. 831 ft.; standing.
Branch Oil Corp.'s No. 1 M. E. Salinas, 155 ft. from N and W lines of lease in Porcion 80, Share 38 ..... Derrick.
R. B. Suttle's No. 1 Guerra, 2,000 ft. to N line, 270 ft. to W line of Porcion 110 ..... T.D. 810 ft.; drlg.
Jess Williams' No. 1 Welsh, 1,120 ft. to W line, 1,500 ft. to N line of tract in Pedernal grant ..... T.D. 425 ft.; set csg.

TRAVIS COUNTY

C. R. Franklin et al's No. 1 J. Wilson, 160 ft. from N and W lines of farm in A. Alexander Sur. ..... T.D. 1,180 ft.; S.D.
Fuchs et al's No. 1 Shiffler, 1,000 ft. to N line, 160 ft. to E line of farm, A. C. Caldwell Sur. ..... T.D. 515 ft.; drlg.
Ray & Henze's No. 1 Hatech, in C of tr. in S. Hamilton Sur. ..... T.D. 540 ft.; S.D.

VAL VERDE COUNTY

Kenneth B. Couch's No. 1 Y. P. Yoas, southeast part of county ..... Spudded in.

WEBB COUNTY

Harris, Hayes & Newton's No. 1 Laurel, 300 ft. from N and E lines of Blk. 5, Sur. 715 ..... T.D. 2,470 ft.; drlg.
O. W. Killam's No. 1 Bruni, 1,667 ft. to N line, 805 ft. to W line of Sur. No. 445 ..... T.D. 2,910 ft.; drlg.
O. W. Killam's No. 4 Bruni, 5,050 ft. to NE line, 7,675 ft. to SE line of El Ranchito tract, J. V. Borrego grant ..... Derrick.
Power & Dettenhalm's No. 1 Cowan & Goss, 1,870 ft. from W line, 1,656 ft. from N line of Sur. No. 1,606. T.D. 255 ft.; standing.
Fansler, Johnson & Peacock's No. 1 Laurel, 425 ft. to N line, 600 ft. to E line of Blk. 10, Sur. 271 ..... T.D. 1,012 ft.; drlg.

WILLIAMSON COUNTY

Burns et al's No. 1 Wilder, 1,800 ft. to N line, 300 ft. to W line of tr. in H. Owens Sur. ..... T.D. 1,480 ft.; no report.
Hays & Gee's No. 1 E. G. Johnson, 1,800 ft. from N line, 170 ft. from E line of tr. in B. C. Low Sur., S of Georgetown ..... T.D. 1,595 ft.; S.D.
McLean's No. 1 R. C. Miller, 300 ft. from S line, 150 ft. from W line, of farm in Manlove Sur. ..... T.D. 1,765 ft.; S.D.
R. S. Wilson's No. 1 Speckles, 150 ft. N of road, 600 ft. from W line of farm in J. Jordan Sur., 1 mile N of Coupland ..... T.D. 875 ft.; S.D.

WILSON COUNTY

A. M. Blume's No. 1 Nickolson, C. Dias Sur. ..... T.D. 1,600 ft.; S.D.

ZAPATA COUNTY

Ballard & Mercer's No. 1 Flores, 500 ft. from NE line, 580 ft. from SE line of Blk. 27, Porcion 37 ..... T.D. 1,439 ft.; drlg.
United North & South Development Co.'s No. 1 Guiterrez, 150 ft. from NE line, 488 ft. from NW line of Blk. 325 of E. M. Doty lease in Charco Redondo grant ..... 1,210 ft.; drlg.

ZAVALLA COUNTY

Carpenter & Jenkins et al's No. 1 John Wolf, Sec. 8, Abstract 1,199 ..... Drlg.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 42)

The Texas Company's No. 37 Koehler, J. B. Stevenson Sur., 717 ft. E and 603 ft. S of NW cor. of SW fee tract ..... Drlg. brown sticky shale 4,634 ft.;
E. M. Wilson's No. 7 W. & P. Gulf fee ..... Pulling screen 1,430 ft.

PORT NECHES—ORANGE COUNTY

The Texas Company's No. 1 Polk-Kuhn-Glass, 260 ft. E and 1,545 ft. S of SW cor. Marshall Beaucham Sur., in the T. J. Notgrass Sur. ..... Drlg. sticky shale and lime 4,971 ft.
The Texas Company's No. 3 Polk, T. J. Notgrass Sur., 500 ft. NE of No. 2 Polk ..... Derrick.
The Texas Company's No. 3 Kuhn, 587 ft. S and 150 ft. W of NE cor. of the Mary E. Hall Sur. No. 2 ..... Derrick.

HULL—LIBERTY COUNTY

Eclipse Oil Co.'s No. 1 Barrow, Jesse DeVore Sur., 50 ft. from N line and 31 ft. from E and W lines 87-acre tract ..... Rigging up.
Republic Prod. Co.'s No. 89-A Dolbear, Jesse DeVore Sur., 25 ft. W of No. 89 ..... Tested salt water 2,955 ft.; pulling screen to deepen.

PIERCE JUNCTION—HARRIS COUNTY

Humble Oil & Ref. Co.'s No. 1 Hooks, James Hamilton Sur. No. 52, 904 ft. N of SW cor. along W line of lease and 396 ft. E at right angles ..... Oil sand 3,884-94 ft.; set 1 jt. 9⅝-in. screen with 9⅝-in. csg. (one string job).
Isaacs & Carwile's No. 1 Settegast (W.O.) ..... T.D. 3,393 ft.; standing.
Navarro Oil Co.-Texas Exp. Co.'s No. 16 Dooley (W.O.), J. Hamilton Sur., 50 ft. from W line and 487 ft. from S line tract ..... Tested salt water 5,002 ft.; to deepen.
Rio Bravo Oil Co.'s No. 10-A Settegast (W.O.), Jos. Kopman Sur. No. 44, 1,300 ft. S and 350 ft. W of NE cor. of lease ..... Trying to set screen 4,528 ft.
Rio Bravo Oil Co.'s No. 18-A Settegast, J. Kopman Sur. (W.O.) ..... Drlg. hard lime rock and shale 6,175 ft.
Rio Bravo Oil Co.'s No. 23-A Settegast, Jos. Kopman Sur. No. 44, 1,375 ft. S and 200 ft. W of NE cor. "A" lease ..... Derrick.
Southern Petroleum Corp.'s No. 1 Gulf Fee (D.D.), 224 ft. from E line and 27 ft. from S line of Lot 36, W. J. Jones Subd., B.B.B.&C. Sur. No. 1,028..... T.D. 4,202 ft.; drill stem stuck; junked.

RABB'S RIDGE—FORT BEND COUNTY

Cullen & West and Gulf Prod. Co.'s No. 3 George, John Rabb Sur., 1,000 ft. due E of No. 2 ..... Derrick.
Cullen & West and Gulf Prod. Co.'s No. 1-A Lockwood & Sharp (D.D.), John Rabb Sur. ..... Standing 4,807 ft.
Cullen & West and Gulf Prod. Co.'s No. 4-A Lockwood Sharp, J. Rabb Sur., 550 ft. W of No. 2-A ..... Derrick.
Cullen & West and Gulf Prod. Co.'s No. 1-B Lockwood & Sharp, John Rabb Sur., 300 ft. N and 300 ft. W of NW cor. of George tract ..... Drlg. sand and lime 4,512 ft.
Gulf Prod. Co.'s No. 2 Mary D. Booth Meyers, J. Rabb Sur., 600 ft. E of No. 1 in center of tract ..... Drlg. sandy shale 3,070 ft.

HIGH ISLAND—GALVESTON COUNTY

Yount Lee Oil Co.'s No. 20 Cade, N. Fitzsimmons Sur., 161 ft. W of No. 15 and 146 ft. SW of No. 17 ..... Shut down 60 ft.
Yount Lee Oil Co.'s No. 24 Cade, 1,010 ft. from NE line and 1,250 ft. from NW line of N. Fitzsimmons Sur... Oil sand 5,276-84 ft.
Yount Lee Oil Co.'s No. 25 Cade, N. Fitzsimmons Sur., 100 ft. due W of No. 23 ..... Drlg. sand and lime 4,800 ft.

DAMON MOUND—BRAZORIA COUNTY

Intercoastal Oil Co.'s No. 6 Wisdom (D.D.), A. Darst Sur., Blk. 51, 2,550 ft. from NE line and 1,150 ft. from NW line of 640-acre tract ..... No report.

NASH—BRAZORIA COUNTY

Harrison & Abercrombie's No. 15 Nash (D.D.), Thos. Alsbury League ..... Drlg. rock 6,453 ft.

ESTERSON—LIBERTY COUNTY

Cranfill-Reynolds Co.'s No. 4 Davis (D.D.), Kokernot Sur. ..... Pulling screen to 2,344 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 126-A Cotton ..... Comp. pumping 19 bbls. 503 ft.
Rio Bravo Oil Co.'s No. 127-A "B" ..... Rig.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 14 Mayes, E. H. R. Wallis Sur., 650 ft. due E of No. 11 in line with No. 9 ..... Oil sand 1,831-73 ft.; to set 9⅝-in. csg. with 1 jt. of screen on bottom.

MOSS BLUFF—LIBERTY AND CHAMBERS COUNTY

Manning Trust Co.'s No. 2 Sergent, Jas. McFaddin Sur. .. Cap rock 905 ft.; S.D.

REFUGIO—REFUGIO COUNTY

Larco Gas Co.'s No. 4 Strauch heirs, 150 ft. from N line and 150 ft. from W line, Lot 6, Blk. 2 ..... Topped sand showing oil 3,686 ft. cem. 6⅝-in. casing.
Moody Seagraves Prod. Co.'s No. 2-A St. John, Refugio town tract, 600 ft. E of No. 1-A and 300 ft. from N line of lease ..... T.D. 5,559 ft.; plugged back and perforated csg. in sand 5,370-84 ft.; set 29 ft. screen and 29 ft. blank; tested gas with slight show oil and 50 bbls. daily salt water; 1,875 lbs. pressure on tubing; 3/16-in. choke.

SOUTH LOUISIANA FIELDS

IOWA—CALCASIEU AND JEFF DAVIS PARISHES

Shell Petroleum Corp.'s No. 2 Heyd, 225 ft. out of NE cor. of Sec. 13-9s-7w ..... Building derrick.
Shell Petroleum Corp.'s No. 1 Fontenot, Sec. 7-9s-6w, 450 ft. due E No. 2 Heyd ..... Building derrick.

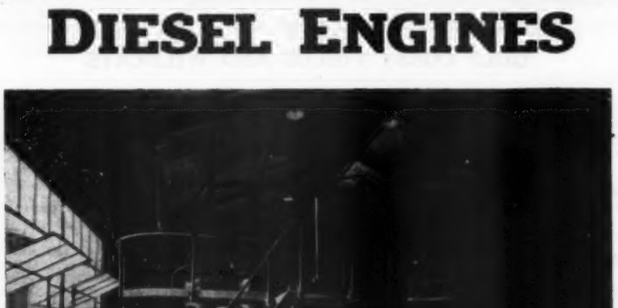
JENNINGS—ACADIA PARISH

Yount Lee Oil Co.'s No. 10 Housierre-Latrielle, 5,435 ft. E and 1,070 ft. N of SW cor., Sec. 47-9s-2w ..... Drlg. hard sand 8,500 ft.

HACKBERRY—CAMERON PARISH

Calcasieu Oil Co.'s No. 23 Watkins (W.O.), 2,495 ft. W and 132 ft. N of SE cor. Sec. 13-12s-10w ..... T.D. 2,844 ft.; set whipstock 2,573 ft.
Calcasieu Oil Co.'s No. 26 Watkins (W.O.), 1,199 ft. N and 1,848 ft. W of SE cor. of Sec. 13-12s-10w ..... Pulling screen to deepen.
Calcasieu Oil Co.'s No. 31 Watkins, 1,402 ft. W and 1,130 ft. N of SE cor. of Sec. 13-12s-10w ..... Standing 3,138 ft.
Calcasieu Oil Co.'s No. 32 Watkins, 1,199 ft. N and 2,042 ft. W of SE cor. of Sec. 13-12s-10w..... Set 23 ft. of 4½-in. screen 2,981 ft.; comp. flowing 2,100 bbls. P.L. oil, 775 lbs. pressure, ¾-in. choke.
R. E. Seiss' No. 3 Vincent, 2,195 ft. S and 1,320 ft. W of NE cor. Sec. 30-12s-10w ..... Location.
R. E. Seiss' No. 2 J. M. Vincent ..... Shut down 2,163 ft.
J. G. Sutton's No. 5 Irwin, 200 ft. N and 2,055 ft. W of SE cor. NE of Sec. 13-12s-10w ..... Set 1 jt. 4½-in. screen 3,023 ft.; comp. flowing 280 bbls. P.L. oil, ¾-in. choke, no pressure.
The Texas Company's No. 8-B State, 1,875 ft. N and 600 ft. E of SE cor. of Sec. 13-12s-10w in Sec. 9..... Drlg. 2,100 ft.

McINTOSH & SEYMOUR DIESEL ENGINES



450-B.hp. unit in the Kilgore, Texas, station of the Magnolia Pipe Line Co.

McINTOSH & SEYMOUR Engines are the best assurance you can buy for continuous heavy-load capacity at sustained high economy, for freedom from operating interruptions and for long useful life at minimum operating expense.

Standardization of most of the parts, and stocks of these standard parts constantly on hand enable us to make up new units of any capacity or furnish replacements on existing installations with least delay.

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If you are figuring on complete new stations or need more dependable power, investigate McIntosh & Seymour Engines, and let our Engineers submit cost and operating data, together with guarantees and proof of exceptional performance.

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Three 180-B.hp. units which serve gathering lines in an East Texas station.

Union Sulphur Co.'s No. 1 Gulf land (Humble lease), 284 ft. N, 30 ft. W of SE cor. Sec. 11-12s-10w ..... Drlg. gumbo 1,105 ft.
Union Sulphur Co.'s No. 1 Gulf land (Pure Oil Co. lease), 1,420 ft. N, 400 ft. W of SE cor. Sec. 11-12s-10w ..... Spudded.
Yount Lee Oil Co.'s No. 44 State, 1,110 ft. N and 1,915 ft. W of SE cor. Sec. 13-12s-10w ..... Location.
Yount Lee Oil Co.'s No. 45 State, 1,320 ft. N and 810 ft. W of SE cor. Sec. 13-12s-10w ..... Location.

VINTON—CALCASIEU PARISH

Marrs McLean's No. 9 Gray (D.D.) ..... Salt 3,203-3,474 ft.; plugged back to 3,226 ft.; sidetracked 1,9[illegible] ft. and coring sand 2,074 ft.

FORT BARRE—ST. LANDRY PARISH

Gulf Refining Co.'s No. 1 Wilson & Cockran, Sec. 4-6s-5e, 100 ft. out of middle SW cor. 593-ac. tract.... Derrick.

STARKS—CALCASIEU PARISH

Gulf Refining Co.'s No. 29 Lutcher-Moore, Sec. 19-9s-12w. Cmtd. csg. to test 1,095 ft.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 722 fee (W.O.), Sec. 29-9s-10w... Drlg. gumbo 5,206 ft.

SWEET LAKE—CAMERON PARISH

Pure Oil Co.'s No. 5 Sweet Lake (D.D.), Sec. 12-13s-8w... Sand showing oil 7,456 ft.; cmtd. 5-in. csg. 7,416 ft.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

O'Hara Oil & Gas Co.'s No. 1 Neilous, J. C. Cummings Hacienda Sur., 650 ft. N of No. 1 Schroeder in 18-acre tract, north edge Mill Creek ..... Derrick.
Pomacal & Boletka's No. 1 Schebajsa, 329 ft. N, 78 deg. E of N cor. B. Dottery Sur., near center of SW line of S. F. Austin 4 League on west fork of Mill Creek.. Set 10-in. casing 120 ft.; standing.

BRAZORIA COUNTY

W. D. Southerland's No. 1 C. W. Chapman, 294 ft. from S line and 104 ft. from E line of Lot 2, Andrew Robinson Sur. ..... Standing 1,514 ft.
The Texas Company's No. 2 Belcher, Harvey N. Little Sur., 1,728 ft. southeasterly from N cor. of S half of Sur., along NE line and thence 128 ft. at right angles ..... Drlg. sand, lime, shale 4,185 ft.
United Oil Syndicate's No. 1 Levitt, 900 ft. from W line and 400 ft. from S line of John Peeke Sur. ..... Junked and abnd. 1,594 ft.
United Oil Syndicate's No. 2 Levitt, John Peeke Sur., 75 ft. NW of No. 1 ..... Location.

BRAZOS COUNTY

Marek & Son's No. 3 A. Marek, N. McFaddin Sur., 1,068 ft. N and 225 ft. W of SE cor. of tract ..... Standing 2,210 ft.
M. O. & T. Corp.'s No. 1 Rigers ..... Standing 1,920 ft.

FORT BEND COUNTY

Stone & Wyman's No. 1 Beard, H.&T.C. Sur. No. 1[illegible], 1,150 ft. from NW line and 1,892 ft. from NE line ... No report.

GRIMES COUNTY

Barnett et al's No. 1 Dodd, Timothy Jones Sur., 280 ft. N Cobb & Rasmussen's No. 1 Dodd ..... Derrick.
Rianjo Oil Co.'s No. 3 Cuthrell, Patrick B. O'Connor Sur., 150 ft. S, 10 degrees E of No. 2 ..... Drlg. shale 880 ft.
Stanolind Oil & Gas Co.'s No. 1 Mary Sullivan, A. Yeamens Sur., 998 ft. out of SE cor. of 742-acre tract.... Location.

HARRIS COUNTY

Givens & Daybault's No. 1 Lobit, David Middleton Sur., Blk. 19, Lobit Subd. ..... Hole heaved; T.D. 2,738 ft.
Hewitt & Shibe's No. 1 Dan Wise, W.C.R.R. Sur., Sec. 11, 100 ft. out of SE cor. 149.33-ac. tract ..... Drlg. shale 2,936 ft.
Louisiana Oil & Dev. Co.'s No. 1 J. W. Wilson, W. Ritchie Sur. ..... Shut down 420 ft.
Shubert & Alexander's No. 1 Herman Hale, 1,058 varas E of NW cor. R. A. Hanks Sur., thence 790 varas S and thence 70 varas W 74 deg. ..... Drlg. gumbo 2,728 ft.

JASPER COUNTY

Hext Drlg. Co.'s No. 1 Flourney, B. F. Jones Sur., 600 ft. NW of Helmerich & Payne's No. 1 Flourney ..... Drlg. gumbo and shale 3,300 ft.

JEFFERSON COUNTY

Brown et al's No. 1 M. O. Todd, 200 varas S and 58 varas E of NW cor. of Wm. Carr Sur. ..... Derrick.
John I. Pipkin and Elam's No. 1 Broussard, McGaffey Sur., 800 ft. from S line in center E and W of 205-acre tract ..... Shut down 1,514 ft.
Texas Gulf Sulphur Co.'s No. 4 Thomas, Fannett, Wm. H. Smith Sur., 1,500 ft. S and 350 ft. W of NE cor. tract ..... Sulphur test.
Texas Gulf Sulphur Co.'s No. 5 Thomas Fannett, Wm. Smith Sur., 1,950 ft. W, 1,600 ft. S of NE cor. of Thomas' 446-acre tract ..... Sulphur test.
Westbury Oil Co.'s No. 4 West, 450 ft. W and 4,210 ft. S of NE cor. of T. D. Yoakum Sur. ..... Shut down in gumbo 600 ft.

LIBERTY COUNTY

Hamm et al's No. 1 Harvard, Davis Hill ..... Gumbo 1,015 ft.; shut down.
J. T. May et al's No. 1 Dunman, J. C. Martin League.... Location.

MATAGORDA COUNTY

United North & South Oil Co.'s No. 1 Stoddard, J. C. Keller Sur., 150 ft. W and 545 ft. N of SE cor. Blk. 53, Buckeye townsite ..... No report.

MONTGOMERY COUNTY

Herman Heep et al's No. 1 Cartwright, 2,851.6 ft. southerly along W line from NW cor. of John O. Davis Sur. and thence 450 ft. E from said line..... Building road to location.
Pevehouse Oil Co.'s No. 1 Sealey, Jas. Pevehouse Sur., 1,575 ft. N of N line of Horton & Woodson's 1,562-acre tract and 2,226 ft. E of W line of H.&W. 1,870-acre tract ..... Drlg. water sand 2,852 ft.
Karl Young et al's No. 1 Damuth, 6,300 ft. from W line and 3,000 ft. from S line of T. J. Nichols Sur. ..... Abandoned 1,784 ft.

NEWTON COUNTY

R. T. Briscoe et al's No. 1 Joe Inman, approx. 1,900 ft. E and 500 ft. N of SW cor. of J. M. Scott Sur. ..... Fishing drill stem 1,300 ft.

ORANGE COUNTY

Altex Oil Co.'s (Veteran Oil Co.) No. 1 Reed, A. Nelson Sur. No. 1, 500 ft. from N line and 250 ft. from E line of tract ..... T.D. 4,063 ft.; sidetracked to 2,9[illegible] ft.; shut down.
Crew Oil Co.'s No. 1-A Mansfield, 50 ft. E of No. 1 ..... Shut down 2,905 ft.

POLK COUNTY

Freeman et al's No. 2 Freeman ..... Shut down 3,162 ft.
T. B. Hoffer's No. 1 Saner-Ragly Lbr. Co., 300 ft. out of most northerly cor. of most easterly County School Land Abst. 271 ..... Shut down 1,517 ft.

REFUGIO COUNTY

Blanco Creek Oil Co.'s No. 1 Damaan, 150 ft. from N line and 150 ft. from W line of Blk. 14, Bonnie View Ranch Subd. ..... Shut down 4,627 ft.
J. C. Dixon's No. 1 Peck, 450 ft. S, 150 ft. E of NW cor. of S half of Sec. 24, Bonnie View Ranch Subd., Estaban Lopez Sur. ..... Cem. 12¼-in. casing 180 ft. standing.
Humble Oil & Ref. Co.'s No. 2 O'Connor, John Keating Sur., 933 ft. N, 20 deg. E of No. 1 ..... Derrick.

SAN JACINTO COUNTY

E. P. Edwards' No. 1 J. R. Bennett, Cold Springs ..... Shut down 750 ft.

TRINITY COUNTY

Scientific Producers Co.'s No. 1 Thompson, I.&G.N. Sur. No. 47, 50 ft. out of NE cor. of E. K. Thompson 199-acre tract ..... S.D. 1,191 ft.

TYLER COUNTY

King Oil Co.'s No. 1 Caswell ..... Sand and shale showing oil 1,2[illegible] ft.; cem. 6-in. casing 1,218 ft. standing.
Allied Pet. Co.'s (Texas Southern Pet. Co.) No. 3 Wilson, Mrs. E. Cherry Sur. No. 798, 1,500 varas from W line and 600 varas from N line ..... Shut down 5,025 ft.

VICTORIA COUNTY

Bunte et al's No. 1 Keeran, 3,714 ft. NE along railroad from SW line of Martin DeLeon Sur., and thence 1,600 ft. NW at right angles ..... Sand showing oil 5,182-91 ft.; drill stem test showed 750 lbs. gas pressure, ¼-in. choke; trying to set 6⅝-in. csg.

Houston Oil Co.'s No. 1 Conrad, T.&N.O. Sur. No. 1, 1,100 ft. from SW line and 100 ft. from NW line .... Abandoned; T.D. 5,290 ft.

WALKER COUNTY

Hart Oil Co.'s No. 1 Thompson Lbr. Co., Jose Ortega Sur., 1,265 ft. S, 1,876 ft. W of SW cor. of J. B. Gibson's 71-acre tract ..... Sandy shale 1,828-32 ft.; drill stem test showed small amount gas.

WALLER COUNTY

McDaniel and associates' No. 1 Citizens State Bank, B.B.B.&C. Sur., C of 150-acre tract ..... No report.

WASHINGTON COUNTY

Penn-Tex Oil Co.'s No. 2 Kamah Brenham, S. M. Williams Sur. ..... Lime and anhydrite 3,550 ft. shut down.

SOUTH LOUISIANA

ASCENSION PARISH

McElroy Pet. Co.'s No. 2 Lacey, 150 ft. S, 150 ft. W of NE cor. of Sec. 39-10s-4e ..... Shut down 4,515 ft.

CALCASIEU PARISH

Crawford Doyle's No. 1 Johnson, Sec. 23-9s-13w ..... Shut down 875 ft.
I. O. Davis' No. 1 Industrial, Sec. 29-9s-10w ..... Standing 6,568 ft.
Hill Oil Co.'s No. 1 W. S. Vincent et al, 642 ft. W., 75 ft. N from SE cor. Sec. 25-10s-10w ..... Derrick.
Wilfred Lahay's No. 1 Jardell, Sec. 16-10s-12w ..... Shut down 3,650 ft.
Success Oil Co.'s No. 1 Hewitt, 90 ft. out of SW cor., Sec. 11-9s-11w ..... Rig.

EVANGELINE PARISH

Emile LeDeau's No. 1 Vidrine, 260 ft. W and 350 ft. S of NE cor. of Sec. 47-3s-2e ..... Rig.

IBERIA PARISH

Jefferson Lake Oil Co.'s No. 26 Lake Peigneur, Sec. 58-12s-5e, 950 ft. N, 73 deg. 6 min. W of No. 8 ..... Sulphur test.

IBERVILLE PARISH

Standard Oil Co.'s No. 2 Myrtle Grove-Wilbert, Bayou Choctaw, 2,040 ft. N and 600 ft. W of C of Sec. 52-9s-11e ..... Drlg. 300 ft.
Standard Oil Co.'s No. 2 Gay, Bayou Choctaw, 4,500 ft. N and 600 ft. E of SW cor. SE of Sec. 52-9s-11e ..... Drlg. 3,945 ft.
Standard Oil Co.'s No. 7 Schwing, Bayou Blue, 1,359 ft. N and 1,856 ft. E of C of Sec. 74-9s-10w ..... Drlg. gumbo 2,105 ft.

LA FOURCHE PARISH

State Prod. Co.'s No. 1-B Stark, 1,921 ft. E and 1,540 ft. S of NW cor. of Sec. 71-15s-15e ..... Sulphur test.
State Prod. Co.'s No. 1-C Stark, 210 ft. S and 140 ft. E of NW cor. of Sec. 71-15s-15e ..... Sulphur test.
The Texas Company's No. 4 L.L.&E., Leesville, Sec. 26-21s-22e ..... Location.

PLAQUEMINES PARISH

Humble Oil & Ref. Co.'s No. 5 Cockrell-Moran, Lake Grand Ecaille, 16,377 ft. N and 2,614 ft. W of NE cor. of Twp. 21s-26e ..... Location.
Humble Oil & Ref. Co.'s No. 7 Cockrell-Moran, Sec. 14-20s-26e, 400 ft. S of No. 4 ..... Rigging up.

POINTE COUPEE PARISH

Grand Bay Oil & Gas Co.'s No. 1 Moniotte, 10,140 ft. S and 13,450 ft. E of NW cor. Twp. 5s-11e in Sec. 94... Shut down 310 ft.

TERREBONNE PARISH

La. Gas & Fuel Co.'s No. 2 Minor, 3,480 ft. S and 1,980 ft. E of NW cor. Sec. 3-18s-16e ..... No report.
The Texas Company's No. 5 State, Dog Lake, 2,370 ft. S and 450 ft. E of NW cor. of Sec. 5-22s-16e ..... Location.
The Texas Company's No. 4 La.L.&E., Bay Junop ..... Location.
The Texas Company's No. 5 State, Lake Pelto, 1,505 ft. N and 1,539 ft. W of SE cor. of Sec. 8-23s-18e ..... Drlg. 1,422 ft.
The Texas Company's No. 10 State, Lake Barre ..... Location.
The Texas Company's No. 12 State, Lake Barre ..... Location.
The Texas Company's No. 14 State, Lake Barre ..... Location.
The Texas Company's No. 1 La.L.&E., Lake Barre, 2,645 ft. S and 596 ft. E of NW cor. Sec. 20-21s-20e ..... Killed well and pulling screen to deepen 3,722 ft.

VERMILLION PARISH

Pure Oil Co.'s No. 2 Alliance Trust Co., Gueydan, 1,875 ft. E and 950 ft. S of NW cor. of Sec. 34-11-1W ..... Drlg. sand 1,482 ft.

WEST FELICIANA PARISH

Putnam Syndicate's No. 3 Como Plantation, Sec. 51-1s-4w No report.

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 34)

C. Kennedy's No. 1 Travis, C SW NE, Sec. 15-7-14 ..... Rig.
C. Canady's No. 1 Jones, NW cor. Sec. 14-8-14 ..... Rig.

ROGER MILLS COUNTY

Ute Oil Co.'s No. 1 Williams, C SW, Sec. 23-12-24w..... C.O. 5,150 ft.
L. C. Hivick's No. 1 Davis, C NW NE, Sec. 4-11-26w..... S.D. 3,375 ft.

WASHITA COUNTY

Miley Pet. Co.'s No. 1 Wolfe, NE SW, Sec. 23-9-17w..... Rig.
Cooper & Terhune's No. 1 Blocker, NW cor., Sec. 29-8-19w ..... Drlg. 2,740 ft.; show oil 2,459-67 ft.; S.D. 2,757 ft.
Burns & Prince's No. 1 Deck, SW cor. Sec. 21-8-18 ..... Drlg. 1,265 ft.

OKLAHOMA PANHANDLE

TEXAS COUNTY

Three Way Oil Co.'s No. 1 Crane, SW NW, Sec. 11-1-1E. T.D. 4,720 ft.; to cement.

SOUTHERN OKLAHOMA

ATOKA COUNTY

Morris et al's No. 1 Mansell, SW NW NW, Sec. 9-2s-12.. S.D. 285 ft.
Brookshire's No. 1 R. W. Rowland, NW NE SE, Sec. 18-3s-10 ..... Landed 10-in. at 1,530 ft.

BRYAN COUNTY

Bryan County Oil's No. 1 Childs, NW SE SW, Sec. 7-7-10. T.D. 650 ft.
Bush et al's No. 1 Commerce Trust, NE cor. Sec. 35-6s-9 ..... T.D. 740 ft.; plugged back to 450 ft.
Whalem et al's No. 1 Mason, NW SE SW, Sec. 24-6s-9... U.R. 5-in. csg. 755 ft.

CARTER COUNTY

Lundy's No. 1 Spraggins, C NE NW SW, Sec. 8-1s-2w.. Rig.

JEFFERSON COUNTY

Smith's No. 1 McCarty, SE NW NE, Sec. 18-4s-8w ..... Location.

LOVE COUNTY

Autry et al's No. 2 Cross, CWL SE NE Sec. 27-6s-2 .... Show oil and gas 970-72 ft. and 1,324-34 ft.; S.D. 1,651 ft.
Schemerhorn et al's No. 1 Bourland, NE NW SW, Sec. 1-6s-1 ..... Drlg. 600 ft.

MARSHALL COUNTY

Everette et al's No. 1 Agres, SE NE, Sec. 14-7s-6 ..... S.D. 1,170 ft
Summers-Sellers' No. 1 Beams, NE SW NE SW, Sec. 20-7s-5 ..... Rig abd.
Newman et al's No. 1 Henry, NW cor. Sec. 22-7s-6..... Rig.

McCURTAIN COUNTY

Prassell et al's No. 1 Wagoner, SE NE, Sec. 5-8s-27 .... S.D. 150 ft.
Stampfs et al's No. 1 Harris, SW NW SW, Sec. 14-9s-25.. Drlg. 2,050 ft.
Stewart's No. 1 Patterson, C SE SE, Sec. 7-6s-24..... U.R. 800 ft.

PUSHMATAHA COUNTY

Whitehead et al's No. 1 Messer, SE SW SW, Sec. 35-3s-18 ..... S.D. 575 ft.

STEPHENS COUNTY

Dameron & Brock's No. 1 Dameron, SE SW NE Sec. 11-3s-6w ..... Drlg. 231 ft.
Brown's No. 1 Hightower, SW SE NE, Sec. 15-3s-5w..... Sand 990-1,004 ft.; S.O.; S.D.
George's No. 1 Ryan, NW SW NE, Sec. 31-3-15 ..... S.D. 120 ft.

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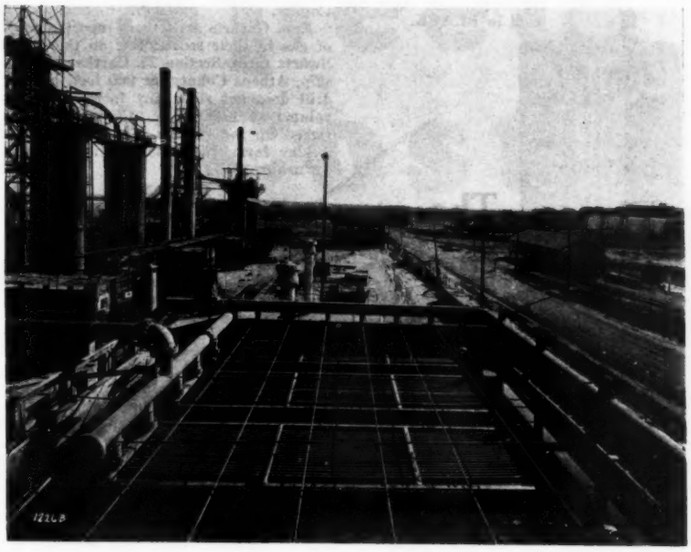

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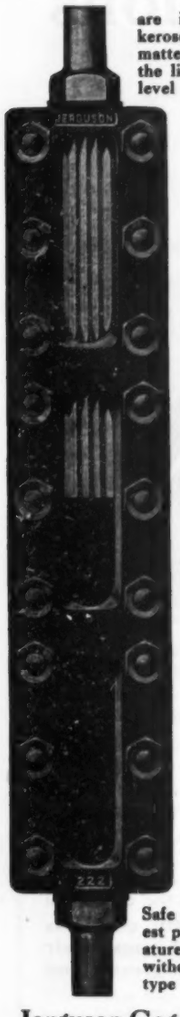

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CENTRAL WEST FIELDS

(Continued from Page 48)

the Berea sand from 1,978-88 feet, and is undecided as to going deeper.

Turner and others are reported to be shut down at 1,222 feet at their test on the John H. Scott farm, Section 29, Orange Township, Carroll County.

At the last report the Wiser Oil Co. was reported at a depth of 4,200 feet on the Holden Clay Products Co.'s property, Lot 9, Sandy Township, Tuscarawas County.

Fred Guthrie and others report a show of gas in their second test on the Israel Swartz farm, Section 25, Carthage Township, Athens County, at 960 feet, but the drill does not show any increase in the volume at 1,000 feet. Clyde Cody has rigged up for his No. 4 on the Charles Ackley farm, fractional Section 6, same township.

INDIANA

Compiled by Paul F. Simpson, state gas supervisor, department of conservation, division of geology, by counties:

Clay County—The Ohio Oil Co. abandoned its test on the St. Louis Joint Stock Land Bank farm in Section 26, Dick Johnson Township, in the top of the St. Peter formation at 2,785 feet.

Daviess County—Ben D. Ruble found a dry hole at 660 feet in No. 1 Home Building and Loan Association, in the SW, Section 27, Harrison Township. In the SE, Section 4, same township, a second well is being started on the Alva C. Smith farm by Amsler & Hilmore.

Floyd County—Brooks J. Johnston is drilling No. 1 James A. Sharp in Section 30, Georgetown Township.

Fountain County—The Fountain Oil & Gas Co. is down more than 600 feet in its test on the Gants farm, in Section 28, Troy Township.

Gibson County—The Ohio Oil Co. abandoned its Nos. 1 and 2 Charles A. Shawhan and No. 1 William Hyneman, in Donation 121, also No. 1 Edith Hyneman, Section 12, all in Washington Township. Same company abandoned No. 6 Munford, in Section 2, Patoka Township. The Wabash Public Service Corp. completed a gas well on the George Allen farm, in Section 22, Columbia Township, at 1,482 feet, where an estimated production of 12,000,000 feet was found. The Gib Van Oil Co. started a second well on the Agnes Haskins lease in Section 18, Washington Township.

Harrison County—Brooks J. Johnston is starting a well on the Burkhart farm, in Jackson Township. In the SE, Section 7, Taylor Township, the Wyandotte Oil & Gas Co. is drilling a second well on the John L. Cunningham farm.

Hendricks County—The French Development Co. is down more than 2,000 feet in its T. A. Reitzel test in Section 6, Liberty Township, having passed the bottom of the Trenton formation.

Henry County—A private gas well was completed on the J. F. McCormick land in Section 1, Fall Creek Township, by Delph & Chew, an estimated production of 10,000 feet being found at a depth of 945 feet.

Knox County—James H. Gardner is drilling on the Union Investment Co.'s farm, in Section 9, Busseron Township.

La Porte County—The test drilling by H. J. Hauck and others on the John Siddles farm in Section 4, Lincoln Township, along Mill Creek, is shut down at the top of the Trenton at 1,400 feet.

Orange County—Tools have been unloaded by C. W. Reichard to start No. 1 Fred A. Cleveland, in Section 30, Orangeville Township.

Perry County—Fred Conyers plugged and abandoned No. 1 Jerome Cassidy, in Section 30, Clark Township. The deep test on the U. B. Cummings lease in the NW, Section 8, Tobin Township, is drilling around 1,515 feet. No. 1 William Dotson, drilled by Hughes and others in the SE, Section 13, Clark Township, is at about 600 feet.

Pike County—Harry N. Bell and others completed a second gas well on the Craig heirs lease in the NW, Section 20, Washington Township, with a production of 1,000,000 feet, from 1,082-90 feet. A third well has been started. Offsetting these wells C. C. Taliaferro is drilling No. 6 on the Aaron George farm. A third well on the R. and F. Morrison lease in Section 30, Washington Township, was completed by C. E. Wommer at 1,164 feet, with an initial production of 453,000 feet. In Section 19, same township, A. V. Burden is drilling No. 1 Walter Smith.

Spencer County—A fourth well on the Marie Berg lease was completed by the Santa Fe Oil Co. with an initial production of about 20 bbls. Also in Section 11, Huff Township, No. 3 William Grass was completed by I. A. Polhamus, making about a 10-bbl. producer.

Switzerland County—F. C. Bakes and others completed a 200,000-foot gas well at 483 feet, on the James Hankins farm in Section 8, Clark Township; also an 83,000-foot well at 441 feet on the Joseph Krummer lease in Section 17. Their best well was on the Ira and David Wiseman farm, in Section 16, where 1,500,000 feet at 90 pounds pressure was found at a total depth of 395 feet. Other wells are drilling on the James Hankins and M. H. Griffith farms in Section 8, and the Lawrence Cooper land in Section 18.

Sullivan County—The tools have been fished out of No. 3 C. W. Scott in Section 6, Fairbanks Township, and the well restored to production.

Warrick County—No. 1 Henry Menke, being drilled by the Eberfield Gas & Oil Co., in the NW, Section 28, Greer Township, is down about 1,500 feet.

Another nice oil strike has been made in the Princeton Field of southwestern Indiana, one of the best wells found in the State for a long period. It is the Big Four Oil & Gas Co.'s test in the northwest corner of the Lottie Hope farm, in Washington Township, Gibson County, which produced an initial of 150 bbls. from 1,286-90 feet.

ILLINOIS

Several drilling wells are shut down in Illinois fields at the present time, there being two shut down in Clark County, one in Coles County, one in Edgar County, three in Crawford County, two each in Randolph and Madison Counties, three in Monroe County, and one each in Washington, Boone, Jefferson, Jasper and St. Clair Counties. In Lawrence County, the Big Four Oil & Gas Co. is reported drilling No. 36 on the E. J. Seed farm, Section 22, Dennison Township, and Collins and others are drilling No. 1 Warch heirs farm, Section 33, Sugar Loaf Township, St. Clair County.

The Ohio Oil Co. abandoned wells as follows in Petty Township, Lawrence County: No. 4 Albert Westfall 74 acres, SW, Section 12; Nos. 27 and 39 S. E. Hazel farm, NE, Section 19; No. 4 Minnie Wright, SE, Section 18; Nos. 17 and 21 Nancy J. Updike No. 2 farm, NE, Section 35; and Nos. 1 and 7 R. M. Hardacre No. 1 farm, NE, Section 12, all in Petty Township.

In the Allendale Field, Wabash Township, Wabash County, the Ohio Oil Co. abandoned Nos. 2 and 4 Edwin Smith farm, NW, Section 9.

KENTUCKY

High water and mud were the cause of little being accomplished by the drill in the Kentucky Fields, as but two completions were announced. One was drilled by Charles H. Young and others near the town of Crofton, Christian County, which showed 700,000 feet of gas at a depth of 580 feet. The other was a dry hole drilled by J. E. Hare and others in a second test on the C. E. Farmer land, near Adaburg, in Ohio County, the well being in the northwest corner of the lease.

WILLIAM HARRIS DIES

CHATHAM, Ontario, Jan. 23.—Word has been received of the death at Otter Point, British Columbia, of William Harris, pioneer Canadian oil operator. In the early days of the Petrolia Field Mr. Harris drilled extensively in partnership with the late John Kerr; and was one of the early drillers in foreign fields, operating in Persia in the early stages of that development. A wife, three daughters and four sons survive.

EASTERN FIELDS

(Continued from Page 48)

ers have reached a depth of 3,003 feet on the C. C. Dunn farm, and C. C. Wolfe is drilling at 480 feet on the J. S. Stanley farm. In Wayne County, A. F. Black, trustee, has reached 1,050 feet on the Guyan Valley Bank lease in Union district.

In Calhoun County, Harley Ferral and others have had to shut down their test on the William H. Wood farm in Lee district after reaching 1,840 feet with the tools in the hole. In Washington district, Holly Jarvis and others are drilling on the Hoke Jarvis farm and have reached 1,260 feet. In Center district, Creed Barker and others have a test drilling at 1,450 feet on the Hattie D. Hathaway farm. Walter Bickerstaff and others have reached 1,450 feet on the John W. Haddox farm in the same district. In Sherman district, Poling & Mollohan are building a rig on the Luther Little lease. In this county three new locations for tests have been made and several rigs are standing.

In Gilmer County but one test is drilling and that is on the P. W. Bartlett farm in DeKalb district which is being drilled by the Pittsburgh & West Virginia Gas Co. and which has reached a depth of 1,015 feet. In Wood County work has temporarily been suspended with several uncompleted wells. This has been caused by the decline in production, and curtailment. Ritchie and Pleasants County are about in the same position with little work and no tests drilling.

In Kanawha County, Grosscup and others have reached a depth of 4,758 feet on the Samuel M. Burdette farm in Elk district and have shut down fishing for the bailer. In Union district, Ellyson & Wilson have reached a depth of 1,710 feet on the Virgil C. Tate farm. In Fayette County, Grosscup & Schultz are down 2,500 feet on the Loop Creek estate in Kanawha district.

In Marshall County, Frye & McCracken have shut down at 2,000 feet on the Clinton E. Frye farm in Cameron district. In Monongalia County the West Penn Gas Corp. is down 2,345 feet on the Kimble Wood farm in Battelle district. In Clay district the Pedlar Run Oil Co. remains shut down on the Lewis R. Hess farm after reaching 2,570 feet.

SOUTHWEST PENNSYLVANIA

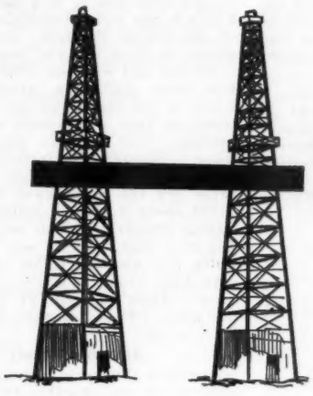
Southwest Pennsylvania continued inactive with no new gas wells nor oil production being brought in during the week. But one hole was finished, and that was a duster. In Hanover Township, Beaver County, C. T. Andrews and others drilled No. 5 on the J. H. Ramsey farm, now the Thomas Whitehill farm, and after no production was found in the 100-foot sand the hole was plugged.

In spite of the disappointing result of the test of the Consumers Fuel Co. at its location on the Anna Grimm farm in Bullskin Township, Fayette County, on the Chestnut Ridge anticline, there is talk of another location being made by the same interests but no definite location has yet been decided on. There is also a rumor that other interests will test southwest of that location.

In proven areas, Green County remains most inactive, with little work being done. In Washington County seven wells are drilling, and the closest to the sand at the present time is the test of the Union Gasoline & Oil Co. on the W. B. Smith farm in East Finley Township, which has reached 2,930 feet. In Richland Township, Allegheny County, a local syndicate is drilling on the W. M. Martin farm and the hole is 800 feet.

KILLED IN FREAK ACCIDENT

MOUNDSVILLE, W. Va., Jan. 23.—A. D. Oliver, 50, veteran oil driller of Moundsville, was killed instantly while working near Glendale. He was caught on a cable of the well rig and crushed against the cable drum. His neck was broken. Oliver returned a month ago from Texas, where he spent two years in the oil fields.



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Humble Diesel Engine Oils	Humble 997 Oils	Humble Cup Greases

Humble Oil & Refining Company

HOUSTON, TEXAS

KANSAS FIELDS

(Continued from Page 36)

cor. SW Section 23-22-12, made 35 bbls. in sand at 1,683-1,698 feet. McGinnis and others' No. 1 Hawthorn, SE cor. SW NW Section 2-25-10, is dry and abandoned at 2,112 feet.

Cowley County

Wakefield and others' No. 1 Cavitt, Lot 8, Block 31, Highland Park addition to the city of Winfield, Section 22-32-4, is a rig under construction.

McPherson County

Olsen Drilling Co. and Shell Petroleum Corp.'s No. 3 Johnson, NE cor. NW SE Section 36-19-2w, has been completed for 788 bbls. potential in Viola lime at 3,395-3,415 feet.

Rice County

Cress and others' No. 1 Sharpe, SE cor. NE Section 13-20-10w, has been deepened from 3,338½ feet to 3,341 feet and pumped 230 bbls.

Sedgwick County

Continental Oil Co.'s No. 1 Goodrich, SW cor. NE SW Section 16-25-1e, is preparing to deepen from 3,022 feet. Derby Oil Co.'s No. 1 Eastborough, SE cor. SW NE Section 19-27-2, is an old well drilling deeper at 2,970 feet. Fisher & Lauck's No. 3 Trustee, NE cor. NW SE Section 19-27-2, is drilling deeper at 2,980 feet. Continental Oil Co.'s No. 1 Susie Black, SW cor. Section 9-25-1e, is dry and abandoned at 3,585 feet in Siliceous lime.

OKLAHOMA FIELDS

(Continued from Page 34)

believe that the majority of the operators will be in favor of dropping the so-called underproduction for the field. Most of the underproduction has been carried over from prior to October 1, and before the military shut down of the field last July and August. Since that considerable underage has been added, and on January 1 the stocks of oil leases were added to the underage.

New Shallow Sand in South

A new shallow sand was found southwest of Duncan in Stephens County in the southern part of the State. Continental Oil Co.'s No. 1 Dare, NE cor. SW SW, Section 2-2s-8w, unexpectedly found a sand at 1,435-40 feet from which the well made 35,000,000 feet of gas in 24 hours, spraying 25 bbls. of oil. The well is located in proven territory and was drilled to protect ownership of a lease. The huge flow of gas found in the well may lead to drilling campaign in the territory. The redrilling of wells in the district is not expected to start until there is a greater demand for the gas.

Gilbert and others' No. 1 Dare, SW cor. NW SE, Section 2-2s-8w, Stephens County, made 160 bbls. of oil the first 18 hours from sand at 1,350-75 feet. The oil tests 41 gravity.

R. C. R. Oil Co.'s No. 1 Green, SE cor. SW SW, Section 35-2-9w, Stephens County, has cemented surface casing and was shut down because of weather and bad roads.

G. Pace and others' No. 1 Mullin, C SW SW, Section 35-2s-5w, Stephens County, was drilling at 1,030 feet.

In the Tatums district, Carter County, several new tests were starting. B. F. Lunday and others' No. 1 Morris-Luster, NE cor. NW SW, Section 8-1s-2w, about 1½ miles northeast of production in the Tatums Pool, was waiting for surface pipe casing cement before resuming operations.

Amos Drilling Co. and others' No. 1 Short, SW cor., Section 18-1s-2w, on the east side of production in the Tatums Field, was also shut down after cementing surface casing at 38 feet.

Carter Oil Co.'s No. 1 L. Lynn, C SW SE NE, Section 31-1s-2w, was rigging up tools expecting to be able to start spudding in a few days. The test is located about 2 miles southeast of the production in the field.

Deep Test Abandoned

J. L. Patterson and others' No. 1 McDuff, SW cor. NW SE, Section 32-9-16, in northern Pittsburg County, has been anbandoned at a total depth of 5,902 feet. The test has been drilling for four years. It was spudded September 2, 1927. Wilcox sand was found at 5,340 feet and showings of oil and gas were found in the Wilcox at 5,445-5,529 feet and at 5,535-55 feet. These showings were not considered commercial. The same operators about five years ago drilled a test in the adjacent section but lost the hole. This test also found the Wilcox sand, with showings of oil and gas, and the second test was drilled in hope of finding the sand productive but after the well was shot several times it was drilled deeper and abandoned.

W. J. Harmon and others' No. 1 Daniels, NW cor. SW, Section 6-12-14, McIntosh County, is a new location about a half mile east of the recent well of W. B. Pine, in Section 1-12-13, Okmulgee County, which made 160 bbls. of oil a day from the Wilcox sand.

In the old Bald Hill district of Okmulgee County, Denton and Marshall have made a location for No. 1 Colbert, SE cor. SW NW, Section 14-14-14.

In the Quinton gas field in Pittsburg County, Mid-Western Oil & Gas Co.'s No. 3 Maddox, CWL SW NE, Section 8-7-18, had a gas sand at 1,884 feet and landed the casing. It was drilling in the sand at 1,935 feet with a showing of gas. Utilities Producing Co.'s No. 1 Church Yard, NE cor. NW NE, Section 16-7-18, was drilling near the pay horizon at 1,650 feet.

Other counties that are active in the eastern part of the State are Muskogee County, Creek and Okfuskee Counties. In Muskogee County, B. W. Christen and others' No. 1 Morrison, C SW NW, Section 15-15-17, in the Taft Field, is underreaming at 1,640 feet. W. B. Pine's No. 1 Jackson, SE cor. NW NW, Section 17-13-16, is a new location. Burke-Greis Oil Co.'s No. 1 Grayson, NE cor. NW SE, Section 32-12-10, Okfuskee County, was drilling below 2,800 feet. The 8-inch casing was frozen at 2,560 feet. In the old Deaner Pool, in Okfuskee County, H. Stekoll and others' No. 1 Hildebrand, SW cor. NW SE SE, Section 16-11-11, was drilling below 2,500 feet. A showing of oil and water was found in sand at 2,335-63 feet.

Beckham County

Pattee Royalty Co. made location for No. 1 Goostree, SW cor. SE SW SE Section 32-10-23w.

Creek County

Gled Oil Co.'s No. 2 D. Bible, SW cor. Section 21-19-9, is spudding. R. F. Moore and others' No. 2 Thompson, NE cor. SW NW Section 17-17-8, is a rig. T. P. Henry and others' No. 1 Purdy, SW cor. Section 15-17-9, is a machine rigging up. The Texas Company's No. 8 Weaver, NE cor. NW NE SE, Section 13-19-8, has been completed for 150 bbls. in Skinner sand at 2,241-79 feet after a shot of 240 quarts. Pioneer Petroleum Corp.'s No. 2 Foster, NE cor. Section 15-19-9, has been abandoned at 2,694 feet. Gled Oil Co.'s No. 2 Hamilton, NE cor. Section 29-19-9, has been completed for 50 bbls. in Skinner sand at 2,119-62 feet after being shot with 200 quarts. J. R. Allen and others' No. 1 S. Fulsom, SW cor. NE NE SW Section 32-17-11, has been completed for 1,000,000 feet of gas in sand at 565-80 feet. S. W. Anthony's No. 2-A C. Whetstone, C NW SE Section 3-16-12, is a dry hole at 760 feet.

Hughes County

Page & Woods made location for No. 1 Jacobs, NW cor. SE NE Section 16-7-8.

Muskogee County

W. B. Pine has a machine on the location for No. 1 J. Jackson, SE cor. NW NW Section 17-13-16. R. B. Hash and others' No. 2 L. Grayson, SE cor. NW NW SE Section 35-16-15, has been abandoned at 1,181 feet.

Okfuskee County

Shell Petroleum Corp. and Shelden and Staples' No. 2 Hopping, SW cor. NE SE Section 21-12-11, is rigging up. C. W. Hicks and Hillcrest Oil & Gas Co.'s No. 1 Lasley, SE cor. SW NW Section 25-10-10, is a rig on the ground.

Oklahoma County

Phillips Petroleum Co.'s No. 1 Brittain, NW cor. NE SE Section 35-12-3w, Oklahoma City Field has been completed for 468 bbls. in four hours on a 3½-inch choke, producing from sand at a total depth of 6,440 feet. T. B. Slick Estate's No. 7 Classen-Edwards, SE cor. SW SW Section 3-11-3w, topped Wilcox sand at 6,374 feet, drilled to 6,497 feet and made 3,932 bbls. in four hours. No. 2 Long, NW cor. SW SE Section 15-11-3w, had Wilcox sand at 6,430 feet, drilled to 6,538 feet and made 3,549 bbls. in four hours against 400 pounds back pressure.

Okmulgee County

S. J. Mathews and others' No. 2 Hughes, C NE NE Section 21-16-11, is drilling at 500 feet. William Sherry and others' No. 1 Pense, C NW SE Section 21-16-11, is rigging up to deepen from 1,781 feet. A. Thompson and others moved a machine in for No. 1 J. Daniel, NW cor. SW Section 6-12-14.

Osage County

Galt Brown Oil Co.'s No. 3, SW cor. SE SW Section 6-24-8, is a cellar.

Pawnee County

Swift and others' No. 1 Redmond, SE cor. NE NE Section 32-20-9, is dry and abandoned at 1,604 feet.

Pontotoc County

Lue Myers and others' No. 1 Jackson, SW cor. NW SW Section 22-5-6, is a cellar. Benedum & Trees' No. 1 Burk, NE cor. SW SE Section 32-5-5 Bebee Pool has been abandoned at 2,765 feet.

Stephens County

L. P. Gilbert and others' No. 1 Green, SE cor. SW NE Section 2-2s-8w, is a rig. P. L. Gilbert and others' No. 1 Dare, SW cor. NW SE Section 2-2s-8w, has been completed for 42 bbls. in sand at 1,362-68 feet.

Tulsa County

S. W. Anthony's No. 5 Sanderson, NE cor. SE NW Section 3-16-12, is drilling at 300 feet.

Wagoner County

J. P. Flanagan's No. 1 T. E. Brewer, SW cor. NE SE NE Section 29-16-19, is dry and abandoned at 1,019 feet.

Washita County

Milley Petroleum Corp. has rig material on the group for No. 1 Chapman, NE cor. SW Section 23-9-17w.

ROCKY MOUNTAIN AREA

(Continued from Page 43)

district, 10 miles northwest of the Greasewood Pool, has not made any new hole since last report when it was bottomed at 7,260 feet after going through 11 feet of formation consisting of streaks of sand in shale which may possibly be the Muddy. The hole is open below the 9⅝-inch at 4,516 feet and shows a tendency to cave. The tools were lost and when operations were resumed this week the fishing job was cleared up and operations then were suspended to wait for heavier mud. The sandy shale encountered at around 7,206 feet was at first thought to be the Muddy, but apparently the formations are so badly broken some doubts remained.

Continental Oil Co.'s No. 1 Gadbois, C SE SW Section 24-6n-61, Greasewood district, will not be completed this week as expected. It was cemented back to 6,550 feet and again is drilling out. After drilling by tools, caving has caused considerable difficulty.

Greeley Oil Co.'s No. 1 Gadbois, C NW NW Section 26-6n-61, swabbed 50 bbls. on January 18 after a shot with 5 quarts and cleaning out. Part of this oil probably had accumulated and the well is rated as about a 20-bbl. producer.

Confirmation of reports that the Ohio Oil Co. will drill a test to the north or east of the Greasewood producers is seen in the shipment to the field of the rotary rig and equipment used in drilling the Crystal Dome test in Idaho which recently was abandoned. The location has not been announced. The company has considerable acreage to the north and east, including all of Section 17-6n-60 and three quarters in Section 12-6n-61, the section to the north of Section 13, upon which Continental's No. 1 Briggs, the nearest producer and the best well in the field, is located. The Ohio company also has two locations on the Gearhart tract on the southwest side of the field and considerable material on hand, but it is not probable either will be Continental's No. 1 Gadbois, which they offset.

Morgan County

Prairie Oil & Gas Co.'s No. 1 Mortier, drilled until after the completion of C NE NW Section 2-5n-60, 6 miles southeast of Greasewood, has salvaged around 4,000 feet of both the 7-inch and 9⅝-inch pipe and is completing the work of abandoning the hole. An error appeared in these columns two weeks ago in stating that oil stood 5,600 feet in the hole ofter drilling a window in the 7-inch to test the Muddy sand. Over the telephone that troublesome word "and" between "five and six hundred" feet failed to register. The facts, from an authoritative source, are that when first bailed dry the hole showed oil. It then bailed about 2 bbls. of water (probably drilling water) per hour and some oil. The next time it bailed out 150 feet of water and about a gallon of oil. The next time about 2 gallons of oil and water. After standing 24 hours there was about 100 feet of water and a mere scum of oil.

Arapahoe County

A wildcat that again is attracting some attention is the MacDeb Drilling Co.'s No. 1 Fitzsimmons, C S half NE Section 7-4s-66, near Aurora. This well has been drilling since early in 1926 and on several occasions was reported to have shows of oil. The last of these was reported nearly a year ago when the bit went through a very hard rock and immediately beneath picked up a show. According to President A. J. Finch, a gallon of oil was on top of the bailer the first time it was run and 2 gallons the second time. The third time, he says, the bailer was almost full of oil. The hole then began to cave and since then the old bottom has never been reached. Two strings of tools and a joint of pipe have been sidetracked, the 6¼-inch, which was suspended at 5,632 feet, was cemented to stop caving from behind it, and then recently the hole was cemented all the way back to the pipe and drilling out has been in progress. At this time it is bottomed at 5,875 feet(revised depth) and is estimated to be only a few feet off the old bottom. President Finch says a number of geologists have visted the well in the past few weeks and that most of these express the opinion it is just off the Muddy sand. If this proves correct, it will upset the former geology on the Denver Basin as heretofore estimates have place the Muddy at around 8,500 feet and the present bottom in the Hygiene. The Pierre was topped at 1,205 feet. At 4,017 feet it cut 12 feet of limestone, which, it is claimed, is the Timpas, a good marker for the bottom of the Pierre. A sand was cut at 2,860-2,910 feet, of which about 10 feet showed some saturation, and this, according to the new theory, was the Hygiene. Sands at 4,595-4,605 feet and 5,510-50 feet, with some sandy shale and thin sands between and above, may have been the Frontier. The next 50 feet of drilling may yield something definite as to the horizon in which the hole is bottomed.

Jefferson County

Ruby Hill Oil & Gas Co.'s No. 1 Braden, SE cor. Section 24-4s-69, near Denver, is preparing to resume at 4,106 feet. The 6⅝-inch was cemented at 3,950 feet before shutting down two months ago.

Adams County

Hills Dome Oil Lease Development Co.'s No. 1 Hills, SE cor. Section 27-3s-64, near Watkins, is still shut down at 3,790 feet due to difficulties in obtaining a supply of fuel oil. It changed over from coal at this depth, and unless a supply is obtainable shortly, it may have to go back to coal.

Park County

South Park Oil & Gas Co.'s No. 1 Esche, SE cor. NW Section 5-9s-76, Muleshoe district, is shut down at 2,442 feet, and South Park Oil Co.'s No. 1 Milligan, NE cor. SE Section 13-8s-76, Jefferson district, is held up by cavey ground at 2,675 feet in the top of a sand which the drillers say is the Dakota. It showed a little gas and rainbows of oil before caves shut off the sand.

Larimer County

Mayer Oil Co.'s No. 1 Reed, SW cor. NW Section 28-4n-69, Berthoud Dome, has landed 6⅝-inch at 2,559 feet and is

drilling and underreaming to land this string on top of the Niobrara, expected within the next 100 to 200 feet.

Rio Blanco County

Magnolia Petroleum Co.'s No. 1 Maddock, C NW SE Section 9-2s-96, Piceance Creek, is drilling at 2,485 feet in brown shale. The 10-inch was cemented at 2,298 feet.

Archuleta County

Oil City Petroleum Co.'s No. 1 Fitzhugh, NW SE SW Section 34-33-1e, Chromo Dome, heretofore carried as Standard Oil Co. of Colorado, is reported to have topped the middle Dakota sand at 670 feet and 10 -inches in, to be making around 500,000 feet of gas. The hole has water in it from sand topped at 652 feet and a string of 8¼-inch has been shipped from Florence. It will be set on top of the second sand and cemented before drilling any deeper. The Oil City Petroleum Co. was formed by citizens of Alamosa, with George A. Loveland as president. It took over the Standard properties in this area, the former operator retaining an interest. No. 1 Fitzhugh had a show of oil at around 310 feet and a show of oil with water in the Muddy. Same interests are drilling at 101 feet in their No. 1 Russell, approximately in the NW Section 35-33-2e, Price Dome.

WYOMING

Weston County

Operations in the Osage Field were of a routine nature and the drilling of offset locations has been rather slow due to snow and severe weather, but a moderation of temperature in the next two weeks should see a completion of several shallow wells now drilling. A number of operators are now seeking new contracts for their production for the present year. One operator has been successful in disposing of his production to a major refiner at a price based on Mid-Continent postings. The movement of this oil will commence shortly. Persistent rumors point very strongly towards confirmation of a deal now pending that may lead to the refining of a considerable proportion of Osage production locally. One Canadian refiner is in the market for 150 bbls. per day, and some oil may move to this destination. The operators are becoming more optimistic concerning the outlook for the coming season, and they express the belief that a better tone to general commodity prices will be accompanied by a rapid recovery of crude oil prices. The Osage Oil Producers Association has again drafted resolution to Congress petitioning for a tariff on imports of foreign crude oil and refined products.

Chadron-Osage Oil Co.'s No. 15, NW cor. SW Section 14-46-64, an east offset to Federal Oil Co.'s No. 1, is drilling into the sand after setting the 6⅝-inch.

West Osage Oil Co.'s No. 2, SE cor. NE Section 15-46-64, is cementing 6¼-inch at 1,500 feet.

Tug Oil Co.'s No. 1, NW cor. SW Section 15-46-64, is completing a fishing job at 900 feet.

Washakie County

Ohio Oil Co.'s No. 1 Strothers, SW SE NW Section 19-45-92, Neiber Dome, has perforated pipe opposite the second Frontier sand at 7,356-68 feet, after cementing liner, and is preparing to test.

Park County

Midwest Refining Co.'s No. 4 Rosenberg, NE NW NE Section 26-58-98, Frannie Dome, is drilling at 850 feet.

Carbon County

Producers & Refiners Corp.'s No. 4 Wertz Dome, SW cor. SE Section 7-26-89, is shut down at 3,541 feet.

MONTANA

Carbon County

Carbon Oil & Gas Co.'s No. 1 Armstrong, SW cor. NW Section 7-7s-22, which extended the pool more than a mile, is preparing to run 2½-inch tubing to produce the well as soon as arrangements for marketing the oil are completed. It filled 2,000 bbls. of storage in 16 hours, flowing through a gas separator with back pressure applied.

Carbon Oil & Gas Co. has made a location in the NW SW SW Section 7-7s-22, on the Mertie McMinn patented tract, one-third of a mile south of its producer. Charles E. Orchard, who has the drilling contract, is moving in rotary and materials.

Ohio Oil Co.'s No. 1 Chapman, C SW SW Section 2-7s-21, Dry Creek Dome, which extended the productive area a mile to the northwest from the discovery well, flowed 886 bbls. in 24 hours through a Shafer bean and, on account of the quality of the oil, is considered a very good well. The oil tests around 52 gravity. The production is coming from the Dakota sand at 5,575-85 feet. After the tanks were filled, the well was shut in. There was no estimate on the quantity of gas.

Ohio Oil Co.'s No. 2 Montana Industrial, C NW NE Section 11-7s-21, is spudding, and its No. 1 Robinson, NW NE SE Section 3-7s-21, has rig up.

Ohio Oil Co.'s No. 2 Souders, C NE SW Section 2-7s-21, has cellar completed.

Ohio Oil Co.'s No. 1 Kuchinski, NW

(Continued on Page 146)

WORKMEN FIND ANCIENT OIL WELL BENEATH FLOOR OF MACHINE SHOP

An interesting addition to the stories of forgotten wells was recorded recently when workmen of the National Transit Pump & Machine Co. in Oil City, Pa., excavating for a machine in one of its shops unearthed an early well of the Pennsylvanian oil country. Eight feet below the floor was uncovered the old wooden conductor pipe, almost filled with oil and with gas bubbling slowly at the surface. It is estimated that this primitive underground equipment had been there for about 70 years.

The whole first section of the wooden pipe and part of the second section were removed intact and these will be preserved for their historic interest. The pipe is of white oak and is as sound as the day it was put into oil well use. The top joint is about 10 inches in diameter, bound at the top with a band of wrought iron 1 inch in width to keep the pipe from splitting. The hole through which the drill passed is about 5 inches across, as smooth as any metal pipe manufactured and as straight and true as modern machinery produces. The top of the first joint shows where it has been battered by the drill and a small groove is worn in one side where the cable slipped up and down.

Joints Ingeniously Connected

The first joint was approximately 10 feet in length and a section 4 feet long has been saved. A portion of the second joint, also about 4 feet in length, is being preserved. This portion of the second section shows the ingenious method of connecting the joints. A wrought-iron connecting sleeve, which does not show a pit mark or sign of rust, fastened the sections together. This band of iron, about 10 inches wide and 7 inches in diameter, was driven into the second section to hold it firm and the bottom of the first section cut to fit over it and form a perfect joint.

The wood is still sound and tough with the original ax marks still plainly visible while the metal is in perfect condition. Imbedded in blue clay and free from water and air the handcraft of pioneer oil men is perfectly preserved.

Both Oil and Gas Present

The small quantity of gas coming from the well was not sufficient to hinder operations in the excavation although it could be smelled. A slight flow of oil was encountered and the pit where the men were at work became saturated with the fluid.

Veteran operators express the belief that the well is one of the first drilled along the Allegheny River during the early oil excitement there. Most of the wells were good producers and were brought in at depths of 300 to 500 feet. When production fell off and the price of crude declined many operators ceased to work their wells, abandoning them without the formality of plugging them.

Since the time this well was abandoned a fill was made in the Transit shop district, both by the river and by man, resulting in the old well being buried 8 feet underground and forgotten.

Left. Top of the second joint, showing method by which the two were joined to form a water-tight union. Right. Part of the top joint, bound with an inch band of wrought iron to keep the tough white oak pipe from splitting.

TURNER VALLEY FIELD OUTPUT 4,600,000 BBLS.

Preliminary estimates recently compiled indicate that, by the close of 1931, the Turner Valley Field will have produced an aggregate of around 4,600,000 bbls. of crude naphtha and light crude oil since Royalite Oil Co.'s No. 4 gusher was brought into production in October, 1924. Prior to that date, some light crude oil was produced from the upper horizons, but there are no dependable estimates of the aggregate production.

Total naphtha and crude oil deliveries to refineries in 1931 will approximate 1,195,402 bbls., valued at $3,705,746.20; compared with 1,312,695 bbls., valued at $4,594,432, in 1930.

The decrease in 1931 has been in the latter half of the year and is due to government conservation measures and to restrictions imposed by Imperial Oil, Ltd., on deliveries. For the first half of 1931 production showed an increase over the corresponding period in 1930. The year was marked by a reduction in refinery prices of crude naphtha and light crude, which materially reduced the value of the production.

Comparative figures of naphtha and crude oil production for 1930 and 1931 show increases in every one of the first six months of 1931, and decreases in five of the last six months for which figures are available. Under conservation measures, production since and including August has been stabilized between 66,000 and 70,000 bbls., being approximately half the production of the same months last year.

Annual production of the field showed a steady growth from 1925, immediately after the first deep lime producer was brought in, till 1930, the peak year. The totals were as follows:

Year—	Bbls.
1925	195,000
1926	200,000
1927	332,132
1928	481,645
1929	956,869
1930	1,312,695
1931 (estimated)	1,195,402

In 1931 some oil was sold direct at the wells, which is not included in these figures.

MICHIGAN FIELDS

(Continued from Page 47)

in that formation, has indications of making a better producer when drilled to a lower pay in the same formation that has proved very productive in the East Pool.

A renewed proration on the bulk of crude oil in the Isabella-Midland Field appears imminent. The Pure Oil Pipe Line Co., buyer of the bulk of the 22,000 bbls. of crude oil produced daily from the field, may be forced to prorate wells linked in its system because of exhausted storage capacity, it was learned. A 500-bbl. limit on a well's daily production was lifted by Pure Oil several weeks ago and since that time virtually open flow production has been taken. The production, however, has been exceeding the company's markets, the excess oil being stored. Pure Oil Co. has seven 55,000-bbl. storage tanks in the field and eight tanks of similar capacity at Bay City. At the present rate of storage, capacity will be exhausted within another week, it was announced.

The Great Western Oil Co., which has nearly completed its 8-mile oil line to North Bradley, expects to start moving oil by February 1.

MUSKEGON

Operators are taking renewed interest in the Muskegon oil and gas field in the way of deepening old wells, and a number will be drilled to the Monroe formation, according to a report of the Muskegon Chronicle, which says:

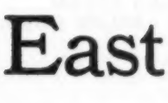
Rigs have been erected by the United Gas & Oil Co. on No. 2 Cooper, and the Muskegon Oil Corp.'s No. 2 Torrent, both on the river flats in Section 8, to drill to the Monroe. The Muskegon Development Co. also has taken out a permit to deepen its No. 1 Hartman, and original lower Travers gasser. The Blue Arrow Petroleum Co. also is considering deepening the No. 2 Workman to the Monroe formation.

East Coast Gasoline Market Recovers

Higher Prices for Both Tank Car and Tank Wagon Deliveries. Minor Markets Hold Steady as Gallonage Continues Satisfactory

By A. E. Mockler
New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, Jan. 25.—Reflecting higher markets in the Mid-Continent and the improved outlook in Atlantic Seaboard territory, East Coast refiners advanced gasoline prices this week, the mark-up in the tank car market amounting to one-half cent per gallon, bringing the posted price back to 6½ cents, while tank wagon and service station prices were advanced 1 cent per gallon at several points in the New England territory.



The recovery in the refinery price basis was one of the quickest experienced for some months back, the half-cent advance coming just a week after a general cut of a similar amount had carried the market downward. The present price basis, refiners contend, is justified both by current demand for motor fuel and by conditions within the industry itself. In fact, refiners state, the gasoline market could be considerably higher without being out of line with fundamental market conditions.

Consumption of gasoline throughout the East has run into unexpectedly large gallonage since the turn of the year. Outside of a few days early in the month, when weather conditions were sufficiently bad to cut sharply into motor fuel demand, January weather this year has been unseasonably favorable and retail gasoline sales have set new high records in many instances. Previous price cuts in refinery quotations, it is held, had substantially overdiscounted the weak crude oil markets, and with general conditions within the industry showing definite indications of early improvement, refiners believe that the days of marketing distressed gasoline made from distressed crude oil are about at an end.

Aside from paraffin wax, which was again quoted lower, markets for minor products showed a fairly firm tone throughout the week. Cylinder oil was lacking in strength on a few grades, but no further price recessions developed, and refiners were showing a tendency to stiffen their price views at current levels. Kerosene was definitely on the strong side, while fuel and Diesel oils were showing more steadiness.

Refinery Gasoline

A general upward revision in posted prices for U. S. Motor gasoline in tank car lots developed during the week, restoring the market to a 6½-cent basis, at refinery terminals, for gasoline of 65 octane number or better, with regular U. S. Motor, under 65 octane number, holding unchanged at 5¾ cents. Offerings at 5½ cents appeared to be a thing of the past, in so far as the local market was concerned.

The latest advance in tank car quotations was inaugurated by Standard Oil Co. of New York, coincident with an increase of 1 cent per gallon in tank wagon and service station prices by that seller at several points in the territory. The increase in the tank car price basis was not confined to New York harbor alone, but took in other major East Coast tank car market centers as well. Sun Oil Co. advanced its tank car price the same days the Socony advance was put into effect, January 20, and other major interests followed later.

Although major sellers, in most instances, offer their antiknock grades (of 65 octane number or better) at the 6½-cent level, some refiners are still specifying only "U. S. Motor" gasoline on such sales and make no guaranty as to knock rating. This is one of the unsettled conditions in eastern tank car operations which will probably be adjusted during the current year, and waits upon further readjustment in refining equipment at some of the large eastern refineries.

Continental Oil Co. is quoting motor gasoline above 65 octane number at 6 cents per gallon in the New York harbor tank car market, and up to the time of writing had not followed other large companies in advancing its posted price. Continental, however, with Pure Oil Co., has been underselling other large refiners by one-half cent per gallon at various times during the past few months.

Stocks of gasoline at East Coast refineries totaled 4,937,000 bbls. as of January 16, against 4,861,000 bbls. at the close of the previous week.

The tanker Arcola arrived at Baltimore recently with 61,000 bbls. of Rumanian gasoline from Constanza. This motor fuel is being shipped from Baltimore to Detroit in tank cars.

Tank Wagon Gasoline

Renewed firmness in the refinery markets was reflected by an advance in tank wagon and service station gasoline prices at several points in New England territory during the week. The increases were initiated by Standard Oil Co. of New York, and followed by other major marketers, and involved Massachusetts, Rhode Island, southern New Hampshire, and southern Maine. In the northern part of the latter state, however, a reduction of 1 cent per gallon was put into effect, readjusting the price basis in that area to that prevailing in the remainder of the territory.

New York and Connecticut were not involved in the week's readjustments, but with the tank car market firming up steadily at principal Atlantic Coast points it is believed that the markets here will shortly reflect the stronger tone evident in the remainder of the territory.

The weather has again turned extremely mild in many parts of East Coast territory, and gasoline consumption has been unexpectedly well maintained. This is at variance with the expectations of marketers, a number of whom some weeks ago expressed the belief that consumption during the first quarter of 1932 would be substantially curtailed.

Although the competitive situation continues rather involved in the metropolitan area, it is understood that price cutting has been minimized in other parts of the territory. For this reason, it is felt, the New York City area will be the last in this territory to experience the higher price levels which have been put into effect at other points. Locally, leading brands are still available at 7 to 8 gallons for $1, including state tax of 2 cents per gallon.

Prevalence of high compression motors in new automobiles now coming into service has tended to offset the mild weather as a factor in the premium gasoline market, and refiners and marketers report that the demand for leaded grades is seasonably active, with prices well maintained.

Kerosene

Refinery movement of kerosene was well maintained throughout the past week, and the market held steady at 6 cents per gallon for 41-43 water white in tank car lots. Refinery stocks were not excessive, and leading refiners were firm at the posted price on spot sales. Jobbing demand was reported to be running ahead of that for the comparable period last year, indicating a heavy domestic consumption during the current heating season.

Tank wagon markets continued steady throughout the territory and there was a well-sustained movement into consuming channels. The volume of retail sales from company-owned service stations this season is reported to be running considerably ahead of that of previous years.

There has been some export inquiry for bulk kerosene in moderately large lots, but the bulk of these shipments are going into export channels through the Gulf.

Lubs

Inquiry for cylinder stocks had shown a little improvement during the week, but buyers were still underbidding the market, and it was apparent that refiners and buyers were still somewhat apart in their price views. Refiners are endeavoring to stabilize the market at current posted levels, however, and with an absence of selling pressure it appears probable that a better tone may be looked for in the spot market shortly.

Movement of industrial lubs has shown a little improvement during the past week, and refiners reported more tank car shipment. Consuming manufacturers, in most instances, permitted their stocks of oil to run down to extremely low levels for year-end inventory purposes, and this has necessitated considerable replacement buying in order to rebuild reserve stocks to safety levels. There were no price changes on red or pale oils during the week.

Petrolatum

The market on the higher grades has strengthened somewhat since the recent downward price revisions, and sellers are now quoting cream at 4¾ cents per pound, lily white at 5¾ cents, and snow white at 6⅝ cents, representing advances of one-quarter cent per pound on each of these three grades.

Domestic demand for petrolatum has picked up, with pharmaceutical manufacturers expanding their operations somewhat. The demand from the export trade, however, has continued to lag.

Paraffin Wax

The spot market again eased off last week, and sellers were offering concessions to speed up prompt shipment business. Spot 120-122 a.m.p. was quoted down an eighth-cent per pound at 2⅝, with 125-127 a.m.p. unchanged at 2⅞ cents, 130-132 a.m.p. off a quarter at 3⅜ cents, 133-135 a.m.p. down an eighth at 3¾ cents, and 135-137 a.m.p. down an eighth at 4⅛ cents per pound.

Domestic consuming manufacturers are evidently determined to withhold placing business until stocks are actually required, and the volume of contract business on refiners' books for shipments during the first quarter of the year is very much under normal.

Export demand has lagged off somewhat, following the exceptionally large shipments that were cleared late in 1931.

Fuel Oil

Volume of bunker oil business was holding up fairly well during the week, refiners continuing to quote 60 cents per barrel, in bulk, f.o.b. refinery terminals, with the usual lighterage charge of 5 cents per barrel for delivery alongside within harbor limits. Contract withdrawals were running into sizable totals, and deliveries to shore installations of industrial contracts were also accounting for a substantial gallonage.

There has been some further talk in trade circles regarding the possibility of an advance in posted prices during the first quarter of the year, but it is generally felt that no action will be taken along this line until further constructive developments in the crude oil situation have been witnessed.

Refiners are continuing to restrict refinery operations in the East Coast area, but notwithstanding recent cuts in runs, stocks of bunker oil continue topheavy. Furnace oil deliveries are accounting for a good amount of fuel oil gallonage this season.

Gas Oil

Spot business fell off somewhat during the week, and the market remained in easy position, with current sales being made at 3½ to 4 cents per gallon, tank cars, refinery terminals, in most instances, although the official posted price was 4 cents per gallon.

Mild weather has tended to curtail consumption of gas oil for fuel for domestic oil burners, and contract withdrawals by the large gas manufacturing companies have also fallen off somewhat. Stocks at East Coast refineries continue rather large.

Diesel Oil

Refiners are viewing the market outlook with a little more confidence, and the market tone was steadier during the week. The posted price for 28-30 Diesel oil continues unchanged at $1.30 per barrel, in bulk, f.o.b. refinery terminals, plus 6½ cents per barrel for lighterage alongside within harbor limits.

Conditions in the shipping industry are still more favorable to Diesel-powered vessels than is the case with other types, the percentage of coal-burning steamship among vessels laid up out of service in various parts of the world still being considerably in excess of that of Diesel-burning vessels out of commission.

Gulf Export Market

There were no cargoes of either gasoline or kerosene closed at the Gulf for export during the week, and no new inquiries. Sellers continued to quote gasoline at 4½ cents for U. S. Motor, 4⅝ cents for 60-62 400 endpoint and 61-63 390 endpoint, and 4¾ to 5 cents for 64-66 375 endpoint. Kerosene was strong at 4¼ cents for 41-43 prime white and 4½ cents for water white.

While no additional trading in South American crude developed during the week, the market remained in steady position, with Venezuelan held at 46 cents per barrel and Mexican heavy at 50 cents.

Advices from abroad indicate that Rumania is making further inroads to Continental markets formerly supplied with gasoline and other refined products from the United States. This is particularly true of the French market, where Rumanian interests have concluded an arrangement for the supplying of considerable quantities of crude and products to France over a period of years.

California Oil Receipts

Receipts of California crude and refined petroleum at Atlantic and Gulf Coast ports during the week ended January 16 totaled 95,000 bbls., a daily average of 13,571 bbls., compared with 222,000 bbls., a daily average of 31,714 bbls. for the previous week and a daily average of 39,214 bbls. for the four weeks ended January 16.

All of the week's receipts, consisting of 95,000 bbls. of gasoline, were at Baltimore, no other Atlantic ports receiving shipments, and none going to the Gulf.

(Tanker charter report, formerly a part of this report, will be found on the foreign and export news page.)

Petroleum Exports

Irregularity characterized operations in the local export market during the past week. Traders reported that new business was of limited amount, and inquiries were likewise confined to small quantities for early shipment. The strongest item in the refined products list is

kerosene, and sellers are strong in their export price views on both the bulk product and burning oil in cases. Gasoline is rather easy, and the minor products are also subject to price shading on export business.

The following table shows refined petroleum products exports from the local port for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Jan. 16	Jan. 9	Jan. 2
Gasoline	3,000	100,000	15,000
Naphtha	.....	.....	10,000
Kerosene	65,000	10,000	140,000
Fuel oil	5,000	10,000	5,000
Lub. oil	1,250,000	2,105,000	4,240,000
Petroleum, ref'd	30,000	260,000	35,000
	Pounds		
Paraffin wax	2,475,000	1,325,000	1,495,000
Refined	390,000	.....	.....
Scale	300,000	265,000	50,000
Lub. grease	935,000	345,000	875,000

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended January 16 totaled 1,334,000 bbls., a daily average of 190,571 bbls., compared with 1,329,000 bbls., a daily average of 189,857 bbls. for the previous week, and a daily average of 220,429 bbls. for the four weeks ended January 16. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast Ports—	
Baltimore	179,000
Boston	129,000
New York	479,000
Philadelphia	375,000
Others	126,000
Total	1,288,000
Daily average	184,000
At Gulf Coast Ports—	
Tampa	46,000
Total	46,000
Daily average	6,571
At All United States Ports—	
Total	1,334,000
Daily average	190,571
Daily average four weeks	220,429

Distribution of total imports is as follows:

Crude	538,000
Gasoline	294,000
Gas oil	11,000
Fuel oil	491,000

Included in the week's receipts at Baltimore was a shipment of 61,000 bbls. of gasoline on the tanker Ranja from Constanza, Rumania, consigned to Detroit.

CANADIAN FIELDS

(Continued from Page 43)

the present wastage continued. "The government," he stated, "has hopes yet that the oil companies will voluntarily accept the agreement. If they do not, they will have to be compelled. Engineers employed by the government have made a thorough study of the problem and the government will have no other course than to accept the recommendations of the oil and gas committee that the agreement be put into operation."

Varying Gas-Naphtha Ratios

According to information compiled by the provincial government, the amount of wet gas required to produce a barrel of naphtha varies greatly with different Turner Valley wells. Some wells show as low as 21,000 feet of gas to a barrel of naphtha, while in some of the older wells as much as 880,000 feet is required. The average is stated to be around 136,000 feet. Following a recommendation of the advistory oil and gas committee, government information in regard to gas-naphtha ratios, pressures and similar matters is being made available to the technical exports of companies interested.

Situation Reviewed

A careful review of the Turner Valley situation was given by J. H. Ross in an address to a joint meeting of the Calgary board of trade and the Oil and Gas Association of Alberta. Mr. Ross stated that since last September, six years' supply of gas has been wasted in Turner Valley.

According to the survey, Turner Valley has approximately 10,000 acres of proven field which in 1931 produced 1,000,000 bbls. of crude naphtha. To produce 1 bbl. of naphtha an average of 141,000 feet of gas was necessary. The naphtha sold at $3 a barrel.

The field minimum reserve is 216,000,000,000 feet and its maximum 560,000,000,000 feet. The wastage is 400,000,000 feet daily, 12,000,000,000 feet a month and 140,000,000,000 feet a year. Consumption is about 8,250,000,000 feet in southern Alberta. Gas to the value of $2,600,000 was burned in Turner Valley last year. The market is limited; and potential markets include the production of power and export of gas. Before export could be assured, Mr. Ross stated, the field would have to be closed for at least two years to determine the exact reserves.

Expenditures on development in the Turner Valley Mr. Ross estimated at $25,000,000 and receipts $19,000,000, of which about $6,000,000 has gone back into the field. Less than $1,000,000 in dividends has been paid. A balance of $12,000,000 has either gone into operating costs or is still in the hands of the companies.

In favor of conservation it was urged that citizens who had invested money and gas consumers were paying for the waste. When the supply diminished rates would go up. There would also be less ultimate production as the amount of gas necessary to produce a barrel of naphtha was increasing. At the same time operators could not afford to close down and wait for markets unless all closed at once by voluntary action or government regulation. For conservation, the field must be handled as a unit. With conservation measures, there must of necessity be an increase in gas rates to compensate operators for delayed dividends.

At the present rate the field will last about four years and pay $11,700,000 returns. If conserved it will last at least 20 years as a gas field and ultimately yield more naphtha, with returns of approximately $40,000,000.

Drilling in the Foothills

On the Monarch structure west of Olds, Cartier-Majestic's No. 1, LSD 3, Section 36-31-7w5, is shut down at 1,135 feet owing to severe weather conditions. Dr. T. B. Williams, geologist, is inspecting the well, and fuel oil, casing and other supplies are being hauled. Drilling is expected to resume about February 1.

On the Pincher Creek structure in the southern foothills, Weymarn Petroleums' No. 2, LSD 5, Section 7-6-1w5, is at 3,980 feet and shut down owing to bad weather. Drilling may not be resumed till spring.

On the High-River-Aldersyde structure, Ranchmen's Gas & Oil Co.'s No. 1, LSD 16, Section 13-20-29w4, is drilling at 5,350 feet and making hole slowly, with small shows of oil and gas continuing.

Alberta Border Areas

Weather conditions have interfered somewhat with drilling operations in the Alberta border areas. On the Twin River structure, Parco Oil Co.'s No. 1, LSD 16, Section 34-1-20w4, is completing preparations for the production test of the 40-foot sand in the top of the Madison lime where strong oil showings were encountered. The hole has been plugged back from 4,072 feet to around 3,900 feet and water shutoff completed, and production test may be completed some time next week.

On the Lethbridge structure, Texas-Imperial's No. 1, LSD 14, Section 22-8-22w4, is reported drilling steadily below 4,493 feet.

On the Keho Lake district, Hudson's Bay Oil & Gas Co.'s No. 1 Keho, LSD 2, Section 17-21-22w4, is reported cementing to make water shutoff in the Sunburst sand above the Madison limestone. As soon as the cement hardens sidetracking of lost tools will be commenced. Redrilling will start at a point between 150 and 175 feet above the oil sand in the Madison, which was around 4,920 feet.

On the Milk River structure, Commonwealth Petroleums' No. 1, LSD 8, Section 9-3-15w4, has finished water well and is resuming drilling with the newly installed rotary outfit at 5,090 feet.

On the Montana side, Fulton Petroleum Co.'s wildcat on the Milk River anticline is drilling around 2,900 feet and getting close to the Kootenay. The test is reported logging very closely with Alberta Pacific Consolidated's No. 1 Spring Coulee, and a potential oil horizon is looked for in the basal Colorado.

Manitoba Gas Test

In the Manitou district, southwestern Manitoba, Commonwealth Petroleums' No. 2, LSD 2, Section 26-2-9wPM, is reported drilling 6-inch hole below 1,300 feet.

Alberta Drilling Costs

Various figures have been given as to the amount spent on drilling operations in the Alberta fields, but a careful estimate indicates an aggregate outlay up to the end of 1931 of around $60,555,000. Of this amount something like $26,700,000 has been spent in the Turner Valley. An additional $10,325,000 has been spent for tests in the foothills, around $10,200,000 for drilling in the central plains, and $3,450,000 for tests in the north. Similar estimates place the returns from production at $26,044,373, including $9,314,281 for natural gas and $16,380,092 from naphtha and crude oil, the latter mostly from the Turner Valley Field.

New Brunswick Operations

A recent statement that crude oil in the New Brunswick fields is chiefly collected from drips at the gas wells may have conveyed a wrong impression as to actual operations in these fields. Very little oil is now found in the gas well drips; but the New Brunswick Gas & Oilfields, Ltd., which has carried on a careful and systematic development, at present has actually 21 producing oil wells. These are actual pumping wells, connected with the company's tankage, and the company's pumping production has been restricted only for some time by ordinary marketing conditions. The New Brunswick crude is of exceptionally high quality, corresponding to the highest quality of Pennsylvania crude.

Ontario Operations

In the Tilbury Field, Kent County, Ontario, Ralph Dawson's No. 2, SW Lot 3, Concession 15, Tilbury East Township, got a flow of 70,000 feet a day from the Tilbury sand at 1,335 feet. A shot of dynamite increased this to around 300,000 feet a day. Production will be taken by Southern Ontario Gas Co. The flow is somewhat better than No. 1 well.

In Raleigh Township, Olga Oil & Gas Co.'s No. 5, Jenner side road, is reported drilling below 1,487 feet and should get the gas horizon within a couple of days.

In Lambton County, Michigan-Pacific Oil & Gas Co.'s No. 1, Lot 10, Concession 12, Brooke Township, is at 640 feet and strengthening the rig for deeper drilling. The hole will be reamed out and deepened to about 2,000 feet to test the Dawn gas horizon. In Enniskillen Township, Sarnia Oil & Gas Co.'s deep test in Lot 18, Concession 2, is reported shut down at 1,380 feet.

CALIFORNIA FIELDS

(Continued from Page 47)

bbls. of oil along with the gas from 5,349 feet.

Elwood

The Honolulu Consolidated Oil Co. successfully completed No. 7, a drilling project on tideland permit No. 90 in the Elwood Field of Santa Barbara County, a few days ago and, while a natural flow was not secured, this new producer is flowing 380 bbls. of exceptionally clean 36.2 gravity oil per day on a compressor from 3,289 feet. The completion of this well practically eliminates all development work in the Elwood Field for the present and no further drilling is anticipated during the next several months. This drilling moratorium is expected to remain in effect even though operators ratify the proposed unification of future work in the deep virgin zone existing beneath the present productive Vaqueros formation.

There has been a consistent increase in drilling operations in the Fruitvale Field of Kern County and a further gain is anticipated in the near future. The formation in this district is particularly conducive to fast footage with the result that the production of this field will register a visible increase if the area now undergoing development is at all productive. The Plymouth Oil Co., incidentally, is believed to have established a record for drilling operations in the Fruitvale Field as its No. 1 Fruitvale in Section 23-29-27 topped the oil sand at 3,650 feet in 16 days and the well completed in less than a month from spud to completion. The company failed to secure a natural flow in this project, however, and preparations are being made to put it on the beam. In addition to the Bluerock Oil Co.'s No. 1 Fruitvale and the Sea Hawk Petroleum Co.'s No. 1-B, both of which are nearing completion, the Bankline, Mohawk Petroleum and the Clarke Oil Co. have begun rig construction for new wells to be started in the near future.

SAFETY HEAD SAVES GAS WELL SEPARATOR

There is a good deal of satisfaction derived from the actual performance of any piece of apparatus under working conditions when it functions as the designing engineers have anticipated. One instance of this kind has been reported by Black, Sivalls & Bryson, Inc., Bartlesville, Okla., regarding the operation of a safety head in one of its oil and gas separators on the property of the Wynona Oil Co., near Wewoka, Okla.

This safety head was 6 inches in diameter and placed in a 3 by 15-foot separator built to operate at from 325 to 500 pounds pressure. The head was so designed that it would blow out if the pressure reached 680 pounds and when it had blown out the opening would permit as much as 65,000,000 cubic feet of gas to escape per day. The separator is placed at a gas well of the Wynona Oil Co. that is making about 30,000,000 feet of gas daily and delivering it into the main line of the Oklahoma Natural Gas Co. through a choke and heater.

The safety head blew out at night when no one was around the well, and in so doing undoubtedly saved the separator and well from serious damage. It had been in use about four months at the time of failure.

After a new head had been put in place set for the same 680 pound relief the pressure again built up in the trap until the pop valves were working and the lease man had to shut down the well. Examination showed that the choke in the line between separator and main line of the Oklahoma Natural Gas Co. had frozen because the heater fire was out. The pressure in the separator built up to nearly 600 pounds and the safety head would have blown out in a few minutes if the operator had not been there to shut in the well.

This experience indicates quite clearly what happened when the first head blew out at night, for the second head held up to 600 pounds and it is very evident that the other one had blown at very close to the predetermined pressure of 680 pounds which had been built up when the heater fire had gone out and the choke in the line froze.

NEW OFFICERS ELECTED BY OIL ELECTRIC CLUB

FORT WORTH, Tex., Jan. 25.—W. G. Moore, Dallas, Tex., was chosen chairman of the Petroleum Electric Power Club at the club's annual session. Mr. Moore succeeds F. A. Graham, Kansas City. D. C. McKee, Joplin, Mo., was elected vice chairman.

Discussion through the sessions of the meeting was directed toward the problems of the oil producer, and the standardization of oil field equipment for the use of electric power.

Members of a committee to arrange an exhibit at the Petroleum Exposition in Tulsa next October are W. H. Stueve, Oklahoma City; J. W. Whitlow, Tulsa; G. R. Prout, Dallas; P. M. Cordell, Fort Worth; F. M. Austin, Houston, and McKee.

A group to represent the club in relations to the American Society of Mechanical Engineers was named as follows: S. C. Hogg, Dallas; William Parkerson, Tulsa, and W. S. Baugh, Wichita, Kans.

Use of electrical power for the transportation of oil by pipe line was discussed by W. G. Heltzel, Tulsa, general superintendent Stanolind Pipe Line Co., and D. H. Levy, Dallas, of the Magnolia Pipe Line Co.

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200 Amp. Lincoln Arc Welded 220/3/60. Practically new. Price $425.00. 100 Amp. Federal Butt Welder; 220 V. 60 cy. Complete. Excellent condition, $500.00. 12"x14" Chicago Pneumatic Air Compressor. $350.00. 46"x18' Niles Lathe, Quick change; $1,250.00. Also, large stock of lathes, shapers, mailing machines, pipe machines, bolt threaders; etc. Send for our list. Terms to suit.
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ALL MODERN TYPE—SLIGHTLY USED
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12—Assorted Clark engines, 90 H.P., 180 H.P., 400 H.P.

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1—50,000 Gal. Ereco absorption plant with pumps, cooling towers, etc.

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RANCH land in Texas and New Mexico, 40 acres to 400,000 acres, improved or unimproved, $2 per acre up; cash, terms or trade for business property, stocks or bonds. Amos Poe, Andrews Building, Dallas, Tex.

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Stockholders' lists of Elliott, Joiner and others in oil royalties, leases and mining. Flory, Worth Bldg., Fort Worth.

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FOR SALE—I have a patent on a temper screw and a drilling line clamp that goes with it though each is complete and can be used with either another screw or clamp. They each are far superior to anything in the market. Owing to pressure of other interests cannot handle them so will sell manufacturing rights or outright. Have a large size screw for demonstration. Both are the outcome of nearly thirty years of active drilling experience. I have used the screw on a difficult fishing job and it worked to perfect satisfaction. Morton H. Magie, Box 132, San Marcos, Texas.

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4"	13.50	SIUE Drill	Seamless	5,867' 0"	263	.50
4½"	15.00	8 thd. Casing	Seamless	3,850' 6"	133	.50
4½"	15.00	8 thd. Casing	Seamless	665' 4"	28	.50
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						F.o.b. Albany, Texas
2"	4	Tubing	Lapweld	14,000'		.12½
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						F.o.b. Madison Kansas
10"	40	Casing	Lapweld	2,300'		$1.40

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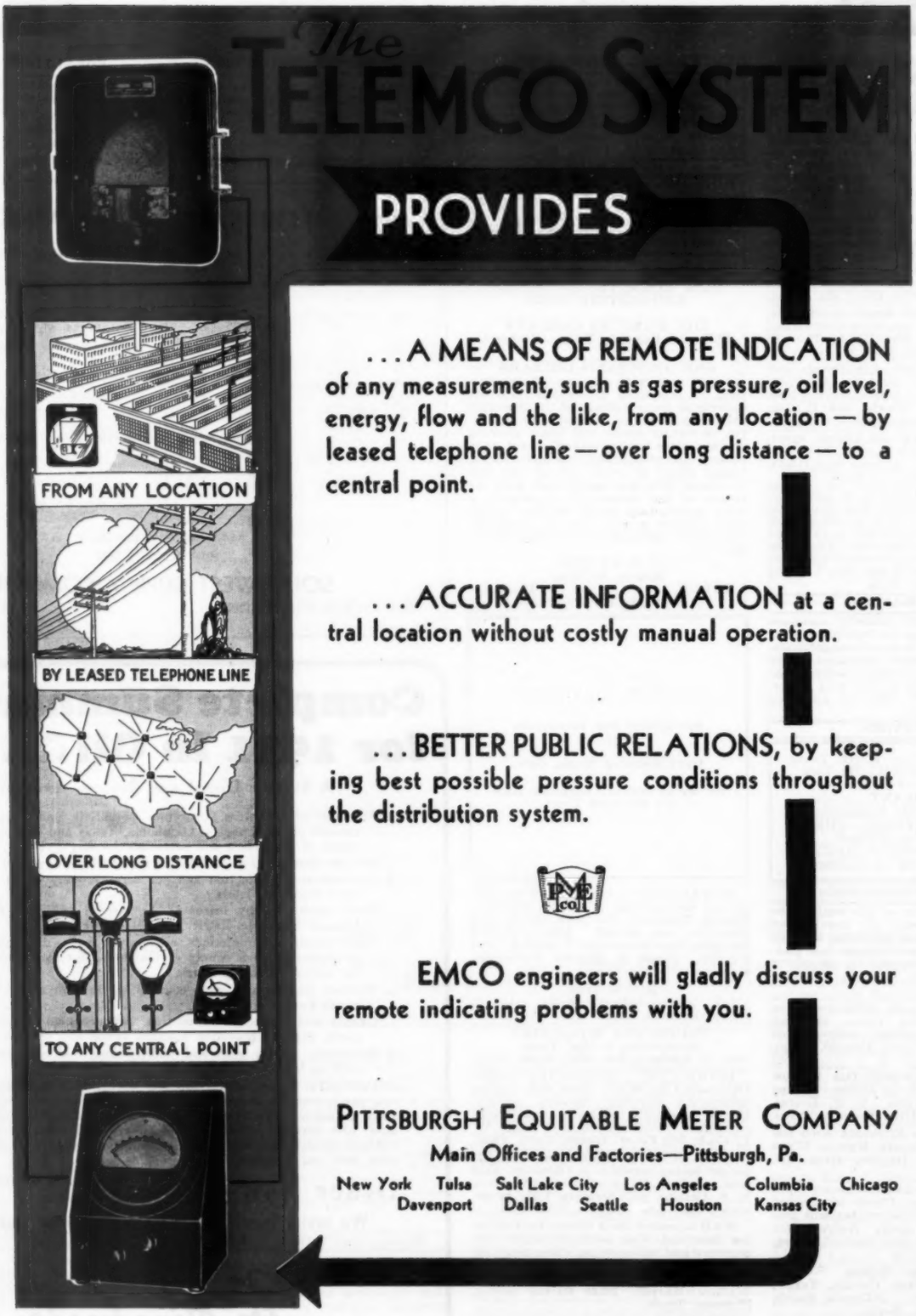
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Natural Gas Industry Developments

NATURAL GAS OUTPUT IN CALIFORNIA GROWS

By R. M. Bauer
Gas Supervisor and Engineer, Southern California Gas Co.*

The natural gas industry has become one of the really big industries of our country. More than 100,000 miles of pipe lines in 20 states supply 17,000,000 of the country's population living in more than 4,000 communities. California now ranks first in the number of natural gas customers, approximately 1,400,000, and third in natural gas production. It is the only large producing state marketing all its production within its own boundaries.

Natural gas is produced in 26 fields in California, extending from Kettleman Hills on the north to Huntington Beach on the south. The fields are divided into three general groups: Los Angeles Basin fields, Coastal fields (Ventura and Santa Barbara Counties) and the west San Joaquin Valley fields. The Southern California Gas Co., Los Angeles Gas & Electric Corp., Southern Counties Gas Co. and other associated companies supplying all of southern California requirements, receive their supplies from 24 gas and oil fields.

The natural gas, produced from oil wells and dry gas wells, varies in B.t.u. content from 900 to 1,225 and in specific gravity from 0.575 to 0.75. Over 90 per cent of our receipts are casinghead gas, which has been treated in absorption plants to remove the gasoline content. With the exception of Kettleman Hills, the pressure available at the outlet of the absorption plants is not sufficient to enter the transmission lines.

Gas-engine-driven compressor units compress the gas to enter the transmission lines. On long transmission lines a booster station is sometimes installed between the field station and the terminal station. Transmission lines vary in diameter from 6 to 26 inches and carry pressures of 100 to 400 pounds per square inch.

At the outskirts of the congested territory (i.e., Calabasas, Newhall) pressure control and measurement stations are maintained. Here also the gas is odorized to give it a distinctive smell. The largest station now operated has a capacity of 140,000,000 cubic feet a day. On the field side of the stations the pressure is built up during periods of light demand in order to provide a pack to draw upon when additional volumes of gas are required.

Gas leaving the terminal stations enters a network of high pressure and low pressure distribution mains through which it reaches the ultimate consumer. The local gas companies distribute domestic gas in a large area, transport gas for producing companies and sell large volumes of industrial gas to widely diversified industries. Both the supply and demand are constantly changing, and the quantity of gas available for distribution and the probable demand must be anticipated and provided for.

Adequately providing for domestic peak hour and peak day requirements is an ever-present problem. Eighty-five per cent of the day's sendout occurs between 6 a.m. and 10 p.m. A peak hour usually between 7 a.m. and 9 a.m. may reach 7 to 8 per cent of the total sendout for the day and a peak day will approximate 5 per cent of the total monthly sendout.

The delivery of gas from the fields is fairly uniform so that additional requirements must come from line pack and from storage. If there is not sufficient gas to meet all demands, the electric steam generating plants and the gas works boilers are switched to oil fuel. If additional supplies are needed, surplus industrial customers are curtailed, the ones having the lower rates being curtailed first. These two classes of surplus industrial customers receive surplus gas at very low rates with the provision that oil fuel will be maintained as a standby. Large standby oil gas generating plants are also maintained.

Holder stations, both high pressure and low pressure, are maintained at convenient locations. In the case of low pressure holder stations, compressor units, generally steam or electric driven, are required to boost the pressure from approximately 10-inch holder pressure to line pressure, 200 to 100 pounds.

The Southern California Gas Co., Los Angeles Gas & Electric Corp., Southern Counties Gas Co. and other associated companies are connected to all the important gas producing fields in California and by means of a network of high pressure and large diameter pipe lines are able to bring large volumes of gas to the centers of distribution during periods of all demands. The extremely diversified operations arising from supply and demand are directed by several centralized dispatching bureaus whose work, in turn, is co-ordinated by an inter-company gas supervisor.

Very large potential reserves lie behind the gas companies' operations. The most important of these are Kettleman Hills, Goleta and Ventura Avenue.

*Before Los Angeles chapters, National Association of Power Engineers.

CARBON BLACK OUTLOOK BETTER, SAYS HUBER

BORGER, Tex., Jan. 23.—There are bright spots in the outlook for the carbon black industry for 1932 in the opinion of H. W. Huber, vice president of the Huber Petroleum Co.

"One reason for optimism," he said, "is that production just about balanced consumption in 1931. In 1930 production was greatly in excess of consumption with the result that the bottom dropped out of the market. Another reason for optimism is that motorists of the nation are driving on worn-out tires. Figures show they have run more than their allotted mileage now. They must be replaced soon, and an increase in tire manufacturing will mean an increased demand for carbon black."

The Panhandle Field produced about 60,000 tons of carbon black, or little more than half of the world's output, in 1931. Production in this field was reduced from 90,000 tons in 1930.

CHICAGO GULF DIRECTOR

CHICAGO, Jan. 25.—Edward Lee Ives, vice president of H. A. Brassert & Co., A. M. Byers Co. and the Michigan Silo Co., and president of the Open Hearth Combustion Co., has been elected a director of the Chicago Gulf Corp.

John T. Wilson, president of the Chicago Gulf Corp., announced the company was going ahead with its expansion program that includes drilling of 30 additional wells. At present the company has five natural gas wells hooked to pipe lines, the output of which is delivered to the Houston Gulf Corp., supplying the city of Houston.

ALBERTA GAS RESEARCH

CHATHAM, Ontario, Jan. 23.—The associate committee of the National Research Council, which has been studying the Turner Valley waste gas problem is holding a meeting in Edmonton. The committee includes Dr. H. M. Tory, Dr. E. H. Boomer, Dr. Charles Camsell, Dr. R. C. Wallace, Dr. G. S. Whitby and P. V. Rosewarne.

BOW ISLAND STORAGE 2,250,000,000 FEET

Two and a quarter billion cubic feet of natural gas from the Turner Valley gas field had been put in reserve in the depleted Bow Island Field up to December 1, 1931, by the Canadian Western Natural Gas, Light, Heat & Power Co., which is repressuring on a large scale, says the Lethbridge Herald.

The gas is being forced back into the subsurface reservoir at the rate of 5,000,000 feet or more a day, being carried from the valley through a special pipe line. This method of conserving otherwise waste gas has been found entirely feasible by the gas company. During the past year no gas from fields on the plains has been used for domestic or industrial purposes. Turner Valley wells are supplying these needs. Other wells have been shut in under the government's plan of conservation.

Oil circles are still discussing the new government order forbidding drilling further wells to the limestone in the Turner Valley Field. This is another conservation step. Wells nearing the lime will be allowed to go on, but new wells will be prohibited. The regulation has met opposition among oil men of the province. The order was made public just before Sterling Pacific, south Turner Valley, blew in with a flow of 20,000,000 feet of wet gas daily. This new well, owned by Vancouver men, may prove one of the best wells in the valley, answering those who say pressure of gas is weakening.

FIRST PORTABLE GAS WAS USED AS LANTERN

The following item is from an old magazine, Gleason's Pictorial Drawing Room Companion, of July 2, 1853:

"In the year 1792 Mr. Murdock made use of gas in lighting his house and office at Redruth, in Cornwall, England, where he then resided. The mines at which he worked being distant some miles from his house, he was in the constant practice of filling a bladder with coal gas, in the neck of which he fixed a metallic tube, with a small orifice, through which the gas issued; this being ignited served as a lantern, to light his way for a considerable distance he had nightly to travel. This mode of illumination being then generally unknown, it was thought by the common people that magical art alone could produce such an effect, and the discoverer actually ran some risk of personal inconvenience from the prejudices of his narrow minded neighbors."

William Murdock, "father of the gas industry," was construction and erection engineer for James Watt, the inventor of the steam engine. He was the first to use gas lighting in his home and in 1802 gave an exhibition of the new light at Soho; in 1804 built a gas works and lighted a cotton mill at Manchester with 900 burners; and in 1808 was awarded the Count Rumford Gold Medal by the Society of London for a paper describing this installation.

ONTARIO GAS FRANCHISE

CHATHAM, Ontario, Jan. 23.—Ratepayers of the village of Wyoming, Ontario, have approved the granting of a natural gas franchise to the Union Gas Co. by a vote of 162 to 72. The franchise is for 25 years, and rates are set at 90 cents per 1,000 for the first 10,000 feet per month, and 65 cents per 1,000 feet over that amount, with 5 cents prompt payment discount. Rates are, however, subject to revision by the Natural Gas Referee or other duly empowered rate-fixing authority. Distribution in Wyoming was commenced in 1930.

PANHANDLE GASOLINE HEARING IS POSTPONED

AUSTIN, Tex., Jan. 25.—The railroad commission's hearing, originally set for January 26, on application of Hagy, Harrington and Marsh of Amarillo for permission to strip gasoline from the firm's gas wells in the Panhandle, has been postponed. It was delayed until after a three-judge federal court hears a pending suit testing the common purchaser of gas statute, trial of which has been reset from January 22 to about February 15, on a date yet to be fixed.

R. D. Parker, chief oil and gas supervisor of the railroad commission, in announcing postponement of the commission's hearing said the commission preferred not to hear this application until after the court hearing on the common purchaser act. If the common purchaser law is sustained, there probably will be no need for this hearing. If the act is not sustained, the commisison wil promptly set the case for hearing and disposition.

The company, in its application for authority to strip gasoline from its natural gas, asserted that no market exists for its gas, and that the gas is being depleted by drainage to wells of exporters who produce their own gas.

REVISE SPECIFICATIONS FOR HELIUM TANK CARS

WASHINGTON, D. C., Jan. 25.—The public safety requires changes in specifications on six multiple cylinder tank cars proposed to be constructed by the Bureau of Aeronautics, United States Navy, for the transportation of helium gas used in dirigible airships, according to a ruling by the Interstate Commerce Commission.

Although a contract for the construction of these tank cars by the Navy Department has been awarded, procedure calls for the submittal of the proposed specifications to a committee representing the American Railway Association, and the committee withheld approval because it felt that present requirements do not provide a sufficient measure of safety. Revised specifications to insure the public safety were submitted to the Interstate Commerce Commission by the committee for approval. The commission has now approved the cars on the condition that the specifications be changed in accordance with the committee's recommendations.—C. E. K.

UPHAM GAS HEADQUARTERS

FORT WORTH, Tex., Jan. 25.—Headquarters of the Upham Gas Co., which has been located at Wichita Falls, Tex., for the past five years, have been moved back to Mineral Wells, and D. A. Upham, president of the company, is again making his home in that city. The Brazos River Gas Co., serving in the Mineral Wells district, is the parent company of the Upham interests. Mr. Upham has sold his holdings in the Northwest Texas Utilities Co., which is serving Wichita Falls and several other towns in that district.

GAS FOR REGINA

CHATHAM, Ontario, Jan. 23.—Norbeck Drilling Co. is reported drilling a test for gas on the Opheim structure between Montana and Saskatchewan. The productive sand is looked for at 2,200 feet. The first producer on the structure was drilled by T. P. Jones of Shelby. Power Corp. of Canada, which has been negotiating for a natural gas franchise for Regina, Saskatchewan, is reported interested in the test.

WELL IN EAST TEXAS IS DRILLED IN LAKE

(Continued from Page 27)

This precaution was taken because this portion of the Gregg County Field is quite prolific and one offset well cored about 30 feet of saturated sand when drilling in and was estimated as being a 25,000-bbl. well when completed. The full section of sand has not been penetrated in that well and one well in the same vicinity is reported as having 70 feet of saturated formation.

The 7-inch casing was set January 21 and cemented and the well will be completed soon. Lease tanks will be set on the bank of the lake to handle the oil. The drilling derrick will be left standing over the well and later when it is necessary pumping equipment will be installed upon the foundation already provided for that purpose.

While there are many other locations along the Gulf Coast in Texas and Louisiana, in California and Venezuela and elsewhere that are drilled on sites located over water, and others in various parts of the country drilled into river beds where piling had to be driven for foundations, this is the first outfit of this kind in East Texas and probably the forerunner of many others to be built later in Lake Deverna, which will probably be very productive of oil judging from wells already completed along its banks.

NORTH AND WEST TEXAS

(Continued from Page 26)

top pay 2,697 feet, shot with 30 quarts at 2,683-2,705 feet, initial production 65 bbls., total depth 2,705 feet.

Vulcan Corp.'s No. 1 C. M. Carpenter, top pay 2,135-2,230 feet, initial production 5,000,000 feet of gas, total depth 2,992 feet.

Hutchinson County

Smith-McDonald and others' No. 4 Pitcher, top pay 3,050-3,100 feet, shot with 180 quarts at 3,030-3,126 feet, initial production 201 bbls. on pump, total depth 3,138 feet.

COMPLETIONS IN WEST TEXAS

Fisher County

The Texas Company's No. 1 Miller, top pay 3,225 feet, initial production estimated 300 bbls., total depth 3,233 feet.

Howard County

American-Maracaibo Co.'s No. 4 W. R. Settles (recompleted), drilled deeper from 2,248 feet to 2,453 feet, top pay 2,388 feet, increased from 2,390-95 feet, initial production 25 bbls. per hour swabbing.

Irion County

J. W. Ellis and others' No. 1 J. M. Nutt, dry and abandoned, total depth 3,202 feet.

Winkler County

Republic Production Co.'s No. 10 Grisham-Hunter, drilled deeper from 2,552 feet to 2,592 feet, now making 250 bbls. oil plus 5,000 bbls. of water (recompleted).

Ward County

Stanolind Oil & Gas Co.'s No. 1 E. H. Brown (recompleted), drilled deeper from 2,559 feet to 2,762 feet, plugged back to 2,390 feet, initial production 17 bbls. per day, gas decreased to approximately 2,000,000 feet.

COMPLETIONS IN WICHITA FALLS DISTRICT

Archer County

Bridwell Oil Co.'s No. 21 Oil Investment Co., oil sand 1,207-24 feet, total depth 1,495 feet, plugged back to 1,226 feet, initial production 50 bbls. Phillips Petroleum Co.'s No. 66 White, dry and abandoned, total depth 2,900 feet. Jack Story's No. 1 Young Langford, dry and abandoned, total depth 2,320 feet. George Alexander, Jr.'s No. 1 J. A. Wood, dry and abandoned, total depth 1,402 feet. F. P. Cullum and others' No. 1 Logan, sandy lime 1,147-61 feet, initial production 83 bbls., total depth 1,161 feet. Schultz and Weaver's No. 1 Green, sandy lime 1,118-34 feet, initial production 30 bbls., total depth 1,134 feet.

Wichita County

G. W. Clark's No. 2 Allen Kemp, oil sand 1,042½-55 feet, initial production 225 bbls. per day, total depth 1,055 feet. George Proctor's No. 1 Foster Allen, dry and abandoned, total depth 643 feet.

United Producer Co.'s No. 4 Allen Kemp, dry and abandoned, total depth 1,832 feet.

Jack County

The Ascot Co.'s No. 1 Maxey, dry and abandoned, total depth 1,412 feet.

Wilbarger County

John O'Neil's No. 1 Yarbrough, dry and abandoned, total depth 1,562 feet.

Young County

Coleman and others' No. 1 Truehart, dry and abandoned, total depth 495 feet. Degener & Co.'s No. 1 Foster, dry and abandoned, total depth 496 feet. King Royalty Co.'s No. 34 Larimore, oil sand 646-97-702 feet, initial production 125 bbls., total depth 702 feet; No. 1 Lowe, dry and abandoned, total depth 902 feet. J. D. Nix's No. 1 Bailey, dry and abandoned, total depth 911 feet.

Petroleum Producers Co.'s No. 7 Dietrick, oil sand 1,103-32 feet, initial production 25 bbls., total depth 1,102 feet. F. L. Raden's No. 1 Davis, abandoned, total depth 3,130 feet. Terrell Wellis and others' No. 1 Choot, dry and abandoned, total depth 727 feet. R. J. Watson's No. 9 Watson, oil sand 697-703 feet, initial production 20 bbls., total depth 703 feet. Wooten and Reed's No. 10 Swain, oil sand 700-06 feet, initial production 36 bbls., total depth 706 feet. Christie Brothers' No. 2 McLaron, oil sand 2,582-98 feet, estimated 15 bbls., total depth 2,598 feet. Henson Tidwell and Phillips' No. 1 Newley, oil sand 2,562-73 feet, initial production 69 bbls. in 24 hours, total depth 2,573 feet. L. A. Long and others' No. 2 Williams "C," oil sand 2,495-2,552 feet, initial production 60 bbls. flowing, total depth 2,552 feet.

COMPLETIONS IN RANGER DISTRICT

Brown County

Humble Oil & Refining Co.'s No. 2 Kilgore, show oil 1,191-1,220 feet, shot with 30 quarts from 1,191-1,215 feet, gauged 106 bbls. in 19 hours, total depth 1,220 feet. H. P. Evans' No. 1 Mrs. H. J. Terroven, dry and abandoned, total depth 985 feet.

Coleman County

Breck Oil Co.'s No. 8 Frank Golson, oil sand 1,605-12 feet, estimated an 80-bbl. well, total depth 1,612 feet. Jameson-Pollard-Forester's No. 1 J. M. Witcher, dry and abandoned, total depth 1,920 feet.

Shackelford County

George Callahan's No. 1 W. R. Biggs, show oil 680-93 feet, shot with 10 quarts at 711 feet, estimated at 7 bbls., total depth 693 feet.

ROCKY MOUNTAIN AREA

(Continued from Page 139)

SE NE Section 15-7s-22, Golden Dome, is rigging rotary at 335 feet.

Corbett Royalty Co.'s No. 1, SW cor. SE Section 1-6s-23, Blue Creek, is running 8¼-inch to the top of a sand at 1,100 feet.

Glacier County

Fulton Petroleum Co.'s No. 1 Blackfeet, SW NE NE Section 28-36-12w, Milk River district, cemented cave at 2,850 feet.

Toole County

Cosmos Petroleum, Inc.'s No. 3 Iowa Holding, NW NE SE Section 2-37-4w, Border Field, found the pay at 2,520-45 feet and oil rose 1,500 feet in the hole. It swabbed 90 bbls. and looks as if it will be a good producer. It is between two producing wells. It will be shot before being completed.

Oregon Oil Syndicate's No. 1 Barthelote, SW NE SE Section 20-36-2e, Barthclote district, is shut down at 2,268 feet preparatory to underreaming pipe and testing a show of gas above this depth. The top of the Kootenai was reported at 1,945 feet.

Fergus County

Melton Corp.'s No. 1 Fenholt, SW cor. Section 24-21-17, Winifred district, is drilling at 3,060 feet, 70 feet below the top of the Kootenai.

Mussellshell County

Laffea Oil Co.'s No. 2, NE NW SE Section 6-10n-25, Devil's Basin, landed 4¾-inch at 950 feet for a water shutoff. The top of the Kootenai was at 786 feet.

Liberty County

Western Natural Gas Co.'s No. 1 Hicks, C NW NE Section 26-37-4e, Whitlash district, is reported to have pumped about 100 bbls. in 24 hours from a total depth of 1,813 feet. Tankage was filled and the wells shut in.

Teton County

Earl Oil Corp., Ltd.'s No. 1 Gad, SE cor. NE Section 22-22-8w, Sun River district, is bottomed at 3,840 feet in the Colorado shale and preparing to cement cave.

UTAH

Utah Southern Oil Co.'s No. 1 Balsey, C NE NE Section 31-23-21, Grand County, is bottomed at 5,300 feet in salt and fishing for the 8-inch bit.

Diamond Oil Co.'s No. 1, SE NW Section 16-8s-5e, Utah County, is reported drilling at 3,454 feet in sandy lime.

Pipe Line Runs

Average daily pipe line runs for the week ended January 23:

	Bbls.
WYOMING	
Salt Creek	21,520
Badger Basin	50
Big Muddy	1,670
Byron	370
Greybull	10
Dallas-Derby	630
Dutton Creek	40
Elk Basin	600
Ferris	20
Frannie	40
Grass Creek	1,960
Hamilton Dome	850
Hudson	430
LaBarge	1,300
Lance Creek	90
Lost Soldier	2,910
Midway	110
Osage	670
Pilot Butte	40
Rock River	1,740
Poison Spider	60
Teapot	20
Total Wyoming	35,130
MONTANA	
Buckley-Border	460
Cat Creek	930
Dry Creek	130
Kevin-Sunburst	3,350
Lake Basin	70
Pondera	920
Total Montana	5,860
COLORADO	
Florence	330
Fort Collins	890
Iles	750
Moffat	820
Orchard	540
Rangely	20
Tow Creek	310
Total Colorado	3,660
NEW MEXICO	
Rattlesnake	750
Hogback	320
Table Mesa	60
Artesia	400
Cap Rock	500
Hobbs	30,985
Jal	903
Lea City	1,976
Eunice	400
Texas Pacific	100
Total New Mexico	36,394
Total Rocky Mountain area	81,044
Total previous week	81,782
Difference	738

EAST TEXAS FIELDS

(Continued from Page 25)

jority of them being in the Kilgore area, Rusk and Gregg Counties. Before drilling into the lime some of them logged a few feet of sand and proved small producers, while eight of them were abandoned without producing any oil.

Georgetown Lime Wells—Kilgore Area

Alco Royalty Co.'s No. 1 Castleberry, J. R. Castleberry Survey, top Georgetown lime 3,494 feet, total depth 3,519 feet, abandoned. Byrd-Frost, Inc.'s No. 1 Camorros Brothers, Haden Edwards Survey, top Georgetown lime 3,506 feet, total depth 3,518 feet, abandoned; No. 6 Hughey, L. B. Outlaw Survey, top Georgetown lime 3,572 feet, total depth 3,651 feet, initial production 150 bbls. through three-quarters-inch chokes per hour, total depth 3,572 feet. Daniels and Patton's No. 1 Dudley H. Wade, survey, top Georgetown lime 3,516 feet, total depth 3,550 feet, abandoned; No. 1 Mercer-Crews, top Georgetown lime 3,554 feet, total depth 3,594 feet, abandoned, M. A. Young Survey.

Humble Oil & Refining Co.'s No. 2 Laird, Mary Van Winkle Survey, top Georgetown lime 3,645 feet, initial production 40 bbls. per hour through three-quarters-inch tubing choke, total depth 3,661 feet; No. 1 Robertson, T. Grace Survey, top Georgetown lime 3,700 feet, initial production 92 bbls. per hour through three-quarters-inch tubing choke, total depth 3,722 feet; No. 1 D. Thomas, Mary Van Winkle Survey, top Georgetown lime 3,633 feet, initial production 18 bbls. in 40 minutes by heads, total depth 3,671 feet. Johnson-Wyde and

THE OIL MAN'S CALENDAR

January

25-29 — Detroit, Mich., annual meeting, Society of Automotive Engineers.

27-28—Milwaukee, Wis., Wisconsin Petroleum Association, Hotel Pfister.

27-28—Sioux Falls, S. D., South Dakota Independent Oil Men's Association, Carpenter Hotel.

30-February 6—Chicago, Ill., National Automobile show.

February

9—Louisville, Ky., Kentucky Petroleum Marketers Association, Brown Hotel.

9-10—Des Moines, Iowa, eleventh annual convention, Iowa Petroleum Association, Fort Des Moines Hotel.

17-18—Springfield, Ill., Illinois Petroleum Marketers Association, Leland Hotel.

23-25—Columbus, Ohio, Ohio Petroleum Marketers Association, Deshler-Wallick Hotel.

March

14-18—New Orleans, La., American Chemical Society.

21-27—Los Angeles, Calif., third annual Oil Equipment and Engineering Exposition.

23-25—Detroit, Mich., Michigan Oil Men's Association, Statler Hotel.

24-26 — Oklahoma City, Okla., American Association of Petroleum Geologists, Biltmore Hotel.

28-April 1—New Orleans, La., American Chemical Society.

April

2-10—Detroit, Mich., National Aircraft Show.

6-8—Birmingham, Ala., Distribution Committee, Technical Section, American Gas Association.

11-16—Boston, Mass., Ninth annual convention, American Oil Burner Association.

21-23—Cleveland, Ohio, semiannual meeting, National Petroleum Association, Hotel Cleveland.

22-24—Dallas, Tex., Petroleum Industry Electrical Assn., Baker Hotel.

27-29—White Sulphur Springs, W. Va., National Pipe and Supplies Assn., Greenbrier Hotel.

May

4-6—Honolulu, Hawaii, National Foreign Trade Council.

9-11—Tulsa, Natural Gas Department, American Gas Association.

9-13—Atlantic City, N. J., National Fire Protection Association.

17-19—Tulsa, Natural Gasoline Association of America.

June

1-3—Tulsa, mid-year meeting, American Petroleum Institute, Mayo Hotel.

6-9—Detroit, Mich., National Association of Purchasing Agents.

20-24—Atlantic City, N. J., American Society for Testing Materials.

Yarborough's No. 1 Bordees, Mary Van Winkle Survey, top Georgetown lime 3,648 feet, initial production 90 bbls. in two hours through open casing, total depth 3,654 feet.

Martin & Co.'s No. 1 T. Elder, Mary Van Winkle Survey, top Georgetown lime 3,616 feet, initial production 30 bbls., total depth 3,617 feet. Morefield Drilling Co.'s No. 1 Ector, Daniel Clark Survey, top Georgetown lime 3,518 feet, total depth 3,702 feet, abandoned. Sabine Oil Co.'s No. 1 Harris, Mary Van Winkle Survey, top Georgetown lime 3,559 feet, total depth 3,666 feet, abandoned. Simplex Oil Co.'s No. 1 Lawther, J. Moffett Survey, top Georgetown lime 3,589 feet, initial production 35 bbls. per hour through three-quarters-inch tubing choke. Snowden Brothers' No. 1 Fainbrough, Landersher Survey, top Georgetown lime 3,484 feet, abandoned, total depth 3,484 feet. J. R. Travis' No. 1 Morton, William McCurry, top Georgetown lime 3,533 feet, total depth 3,700 feet, abandoned.

Pumping Wells in Kilgore Area

Chapman and others' No. 1-A Russell, initial production 100 bbls., 3 per cent b.s. and water, total depth 3,680 feet. East Texas Refining Co.'s No. 1 Mayfield, shot with 100 quarts at 3,631-3,730 feet, total depth 3,730 feet; Galvez Oil Co.'s No. 1 Alexander, total depth 3,614 feet; Madden and others' No. 1 Mayfield, total depth 3,734 feet; Magnolia Petroleum Co.'s No. 2 Wills, total depth 3,646 feet; No. 5 Wills, total depth 3,712 feet; Martin & Co.'s No. 1 Elder, shot with 110 quarts at 3,536-80 feet, total depth 3,617 feet; Shell Petroleum Corp.'s No. 1 A. Holt, total depth 3,740 feet; Sinclair Oil & Gas Co.'s No. 1 Kennedy; Sun Oil Co.'s No. 1 Walker, flowed 50 bbls. by heads, 65 per cent water before pumping; and Wheelock and Collins' No. 4 Wells, 60 bbls. daily.

Joiner Area

There are far more wells pumping and about 30 wells standing dead in the Joiner area, Rusk County, than in the Kilgore area, but the latter may be considered more significant.

The first well on the list is on the western side of the field, north of Overton, and Sun Oil Co.'s No. 1 Walker is on the western side of Gregg County, south of Gladewater. The remainder are near the town of Kilgore. The Sun well and Chapman well both made water as can be seen by the report. The others are on the eastern side of the field, in the low pressure area, and bottom of holes near or in the Georgetown lime.

A thorough investigation of producing leases is being made in the Gladewater and other areas in East Texas by officers of the National Guard under Gen. Jacob F. Wolters in regard to producers who have been using bypasses on wells and lines to run oil in excess of the allowable production, this oil not being reported, consequently no royalty being paid on it. Indictment is to be asked for operators on whose wells bypasses were found.

The investigation of leases for alleged bypasses follows several months of complaints on the part of lease and royalty owners, who have charged that more oil was being run from wells under which they held royalty, than they were being paid for.

COMPLETIONS IN EAST TEXAS

Gregg County

Arkansas Fuel Oil Co.'s No. 5 Adrian-McCary, top sand 3,521 feet, initial production 86 bbls. per hour through three-fourths inch tubing choke, total depth 3,553 feet; No. 2 M. Christian, top sand 3,600 feet, initial production 100 bbls. in 30 minutes through 1-inch tubing choke, total depth 3,626 feet; No. 1 T. Snoddy, top sand 3,558 feet, initial production 100 bbls. in one-half hour through 1-inch tubing choke, total depth 3,562 feet. Barnsdall Oil Co.'s No. 3 R. E. L. Ferguson, top sand 3,652 feet, initial production 100 bbls. per hour through 1-inch tubing choke, total depth 3,676 feet. No. 4 G. W. Bingham, top sand 3,515 feet, initial production 72 bbls. in one-half hour through 1-inch tubing choke, total depth 3,560 feet. J. B. Bond and others' No. 1 R. P. Johnson, top sand 3,588 feet, initial production 100 bbls. per hour through three-fourths inch tubing choke, total depth 3,604 feet.

Darby Petroleum Co.'s No. 1 C. C. Clemons, top sand 3,605 feet, initial production 100 bbls. per hour through 1-inch tubing choke, total depth 3,642 feet. Deep Rock Oil Co.'s No. 2 Tooke, top sand 3,555 feet, initial production 129 bbls. per hour through three-fourths inch tubing choke, total depth 3,595 feet. Dillard Petroleum Co.'s No. 4 W. R. Jones, top sand 3,631 feet, initial production 60 bbls. in one-half hour through three-fourths inch tubing choke, total depth 3,656 feet. F. H. E. Oil Co.'s No. 6 B. C. Christian, top sand 3,676 feet, initial production 100 bbls. per hour through three-fourths inch tubing choke, total depth 3,706 feet. Gilcrease Oil Co.'s No. 2 A. Christian, top sand 3,565 feet, initial production 35 bbls. in 40 minutes through three-fourths inch tubing choke, total depth 3,580 feet. Gulf Production Co.'s No. 1 Ross Young, top sand 3,596 feet, initial production 70 bbls. per hour through three-fourths inch tubing choke, total depth 3,615 feet.

Howard Petroleum Co.'s No. 2 Arch Davis, top sand 3,544 feet, initial production 38 bbls. in one-half hour through 1½-inch tubing choke, total depth 3,584 feet. Humble Oil & Refining Co.'s No. 5 A. L. Hughes, top sand 3,607 feet, initial production 80 bbls. per hour through three-fourths inch tubing choke, total depth 3,654 feet; No. 3 W. R. Hughes, initial production 33 bbls. per hour through 1-inch tubing choke, total depth 3,700 feet; No. 1 H. M. Lawrence, top sand 3,600 feet, initial production 47 bbls. per hour through three-fourths inch tubing choke, total depth 3,632 feet. B. K. Issac's No. 1 J. A. Tuttle, top sand 3,598 feet, initial production 31 bbls. in one-fourth hour through eleven-sixteenths inch tubing choke, total depth 3,621 feet.

Magnolia Petroleum Co.'s No. 10 Everett, top sand 3,665 feet, initial production 270 bbls. per hour through 1-inch tubing choke, total depth 3,669 feet; No. 3 T. B. Stinchomb, top sand 3,563 feet, initial production 222 bbls. per hour through open tubing, total depth 3,575 feet. Morgan and McMinn's No. 1 H. L. Foster, top sand 3,578 feet, initial production 240 bbls. per hour through 1-inch tubing choke, total depth 3,621 feet. Prairie Oil & Gas Co.'s No. 3 W. H. York, top sand 3,570 feet, initial production 120 bbls. per hour through 1-inch tubing choke, total depth 3,575 feet.

Red Star Oil Co.'s No. 2 R. Christian, top sand 3,595 feet, initial production 160 bbls. per hour through 1-inch tubing choke, total depth 3,626 feet; No. 2 M. Lemaire, top sand 3,588 feet, initial production 66 bbls. per one-half hour through 1-inch tubing choke, total depth 3,617 feet. Shell Petroleum Corp.'s No. 2 J. W. Aiken, top sand 3,508 feet, initial production 64 bbls. in one-half hour through 1-inch tubing choke, total depth 3,591 feet; No. 2 A. W. King, top sand 3,558 feet, initial production 60 bbls. in one-half hour through open tubing, total depth 3,615 feet.

Simms and Stanolind Oil & Gas Co.'s No. 2 J. B. Tenery, top sand 3,600 feet, initial production 145 bbls. per hour through 1-inch tubing choke, total depth 3,612 feet. Simms Oil Co.'s No. 1 Bob Wood, top sand 3,516 feet, initial production 130 bbls. per hour through open tubing, total depth 3,540 feet. Sun Oil Co.'s No. 4 J. McKinley, top sand 3,636 feet, initial production 85 bbls. per hour through open tubing, total depth 3,645 feet. Superior Oil Co.'s No. 8 L. C. Ingram, top sand 3,508 feet, initial production 45 bbls. in 15 minutes through 1-inch tubing choke, total depth 3,578 feet. Sutton and Hawkins' No. 3 Whittaker, location abandoned. L. H. Wentz Oil Co.'s No. 2 G. W. Ritchy, top sand 3,515 feet, initial production 15 bbls. in one-quarter hour through 1-inch tubing choke, total depth 3,565 feet. Yount Lee Oil Co.'s No. 4-A Fenton, top sand 3,621 feet, initial production 81 bbls. per hour through 1-inch tubing choke, total depth 3,643 feet; No. 2 Tuttle, top sand 3,597 feet, initial production 32 bbls. in one-half hour through open tubing, total depth 3,617 feet. Gulf Production Co.'s No. 2 Calvin Brown, top sand 3,544 feet,

Egyptian Government
Supply of Crude Petroleum

The Egyptian Government invites offers for the supply and delivery at the Petroleum Harbour, Suez, Egypt of a consignment of crude petroleum (of naphthenic base) not exceeding five thousand tons.

The Petroleum Harbour at Suez has sufficient depth for tankers of the size required. All necessary facilities for pilotage, berthing etc., are available. Steam at suitable pressure can be supplied free to the contractor from shore installation.

The government Refinery tanks are situated less than 2,500 metres from the harbour and are connected therewith by steel pipe lines, no part of which is less than eight inches diameter.

The oil should be free from water, salt or other foreign matter and should be of a variety yielding after ordinary large scale distillation in a topping plant:

(a) A residue which is comparatively free from asphaltic bodies and is suitable without further treatment for use as a fuel in engines of the Diesel or Semi-Diesel type. This residue should remain fluid when cooled, its viscosity at 100°F (eq. 38°C) not exceeding the following values:

Redwoods No. 1 Viscometer.....190 seconds
or Saybolt (Universal) .....240 seconds
Engler ..... 6.5 degrees

Its "pour point" (I. P. T. or A. S. T. M. method) should not exceed 5°C.

(b) A volatile distillate amounting to from 20% to 40% of the crude petroleum. About half of this should consist of a "Benzine distillate" with a final point not higher than 190°C, and the remainder of a "Kerosine distillate" with a final boiling point not higher than 325°C.

It is desired that the oil should reach Suez early in April. Tenders must contain full analysis and technical particulars of oil offered which will be sampled by the Government representative before shipment and which must agree with the particulars of the offer.

Quotations to be in sterling if possible, and to be for payment ten days after completed delivery at Suez.

Offers should be addressed to reach the Chief Inspecting Engineer to the Egyptian Government, 41, Tothill Street, London, S. W. 1. England *by noon 22nd February.*

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READ THE CLASSIFIED BARGAINS ON PAGES 142-143

initial production 120 bbls. per hour through three-quarters-inch tubing choke, total depth 3,557 feet; No. 4 Culver, top sand 3,543 feet, initial production 112 bbls. per hour through three-quarters-inch tubing choke, total depth 3,558 feet. J. H. Turner and Gandy's No. 1 Benson, top sand 3,613 feet, initial production 100 bbls. per day through various chokes, total depth 3,619 feet. N. V. Kinsey's No. 1 Ben Laird, top sand 3,538 feet, initial production 100 bbls. per day through various chokes, total depth 3,570 feet. Louisiana Oil & Refining Co.'s No. 1 W. C. Griffin, top sand 3,541 feet, initial production 85 bbls. in one-half hour through 2½-inch tubing choke, total depth 3,566 feet. Magnolia Petroleum Co.'s No. 2 J. Redford, top sand 3,669 feet, initial production 140 bbls. per hour through three-quarters-inch tubing choke, total depth 3,673 feet.

Navarro Oil Co.'s No. 1 Green, top sand 3,550 feet, initial production 175 bbls. per hour through open tubing, total depth 3,575 feet. Shell Petroleum Corp.'s No. 4 J. S. King, top sand 3,636 feet, initial production 18 bbls. in one-half hour through tapered tubing, total depth 3,644 feet; No. 14 J. B. Watson, top sand 3,605 feet, initial production 10 bbls. in one-half hour through open tapered tubing, total depth 3,669 feet. Steen Drilling Co.'s No. 3 W. D. Lacy, top sand 3,655 feet, initial production 128 bbls. per hour through 1-inch tubing choke, total depth 3,666 feet. Sun Oil Co.'s No. 3 Cole, top sand 3,517 feet, initial production 83 bbls. per hour through three-quarters-inch tubing choke, total depth 3,541 feet.

The Texas Company's No. 4 J. M. Dickson, top sand 3,507 feet, initial production 95 bbls. through three-quarters-inch tubing choke, total depth 3,591 feet. Tidal Oil Co.'s No. 3 E. R. D. Bivens, top sand 3,625 feet, initial production 31 bbls. in five minutes through open tubing, total depth 3,637 feet. W. C. Turnbow's No. 2 H. T. Elder & Sons, top sand 3,541 feet, initial production 185 bbls. in 55 minutes through open tubing, total depth 3,600 feet. Wheelock and Collins' No. 1 Clayton heirs, top sand 3,520 feet, initial production 125 bbls. per hour through open tubing, total depth 3,525 feet.

Polk County

Humble Oil & Refining Co.'s No. 1-A Onolaska Live Stock, dry and abandoned, total depth 1,445 feet.

Rusk County

A. J. Brown's No. 1 Strong, dry and abandoned, total depth 860 feet. Devonian and Gulf Production Co.'s No. 11 R. A. Motley, top sand 3,751 feet, initial production 90 bbls. per hour through three-quarters-inch tubing choke, total depth 3,763 feet.

Oliphant's No. 1 W. P. Moore, top sand 3,745 feet, initial production 108 bbls. per hour through three-quarters-inch tubing choke, total depth 3,748 feet. Empire Gas & Fuel Co.'s No. 5 C. O. Christian, top sand 3,766 feet, initial production 70 bbls. first half hour through 2-inch tubing choke, total depth 3,776 feet. Gulf Production Co.'s No. 4-B Christian, top sand 3,643 feet, initial production 25 bbls. per hour through three-quarters-inch tubing choke, total depth 3,646 feet; No. 2 O. H. Morris, top sand 3,642 feet, temporarily abandoned, total depth 3,666 feet. Houston Oil Co.'s No. 3 S. S. Laird, top sand 3,616 feet, initial production 80 bbls. per hour through three-quarters-inch tubing choke, total depth 3,676 feet. Humble Oil & Refining Co.'s No. 1 Ben Peterson, top sand 3,516 feet, initial production 83 bbls. per hour through three-quarters-inch tubing choke, total depth 3,648 feet. Lewis Production Co.'s No. 1 W. D. Peterson, top sand 3,603 feet, initial production 100 bbls. per day pinched, total depth 3,650 feet.

Shell Petroleum Corp.'s No. 6 W. P. Moore, top sand 3,719 feet, initial production 19 bbls. in one-half hour through open tubing, total depth 3,726 feet. Ward Oil Co.'s No. 3 Beall, top sand 3,725 feet, initial production 100 bbls. per day pinched through various chokes, total depth 3,727 feet. Arrow Oil & Refining Co.'s No. 1 L. B. Rollins, top sand 3,642 feet, initial production 32 bbls. per hour through open tubing, total depth 3,655 feet. Gulf Production Co.'s No. 1-A H. H. Rayford, top sand 3,707 feet, initial production 70 bbls. per hour through three-quarters-inch tubing choke, total depth 3,711 feet. Humble Oil & Refining Co.'s No. 1 J. E. Arnold, top sand 3,636 feet, initial production 72 bbls. per hour through three-quarters-inch tubing choke, total depth 3,720 feet; No. 10 Mullikin, top sand 3,725 feet, initial production 33 bbls. in one-half hour through three-quarters-inch tubing choke, total depth 3,788 feet; No. 5-A J. H. Silvey, top sand 3,687 feet, initial production 62 bbls. in one-half hour through three-quarters-inch tubing choke, total depth 3,700 feet. H. E. Lewis and others' No. 1 Griffin, location abandoned.

Mid-Kansas Oil & Gas Co.'s No. 3 R. G. Mason, top sand 3,607 feet, initial production 120 bbls. per hour through open tubing, total depth 3,650 feet; No. 1 J. M. Price, top sand 3,621 feet, initial production 120 bbls. per hour through open tubing, total depth 3,660 feet. Arch Page's No. 1 Florey, top sand 3,815 feet, initial production 20 bbls. in 20 minutes through 1-inch tubing choke, total depth 3,817 feet. Stanolind Oil & Gas Co.'s No. 1 T. O. Mason, top sand 3,611 feet, initial production 108 bbls. per hour through open tubing, total depth 3,650 feet.

The Texas Company's No. 1 J. M. Price, top sand 3,618 feet, initial production 110 bbls. per hour through three-quarters-inch tubing choke, total depth 3,652 feet. Texas Trading Co. and others' No. 1 T. O. Mason, top sand 3,582 feet, initial production 120 bbls. per hour through open tubing, total depth 3,654 feet. Tidal Oil Co.'s No. 1 Otis Whittington, top sand 3,582 feet, initial production 1,080 bbls. per day based on 10 minutes' gauge on open tubing, total depth 3,720 feet. R. H. Vise's No. 1 Mrs. L. Morse, top sand 3,784 feet, initial production 50 bbls. in one-half hour through open tubing, total depth 3,785 feet.

Smith County

J. R. Meeker and others' No. 1 Lewis Bacon, dry and abandoned, total depth 4,178 feet. Gulf Production Co.'s No. 1 G. A. Turner, top sand 3,826 feet, initial production 40 bbls. per hour through three-quarters-inch tubing choke, total depth 3,829 feet. Hamilton and others' No. 4 L. A. Gambrell, top sand 3,669 feet, initial production 90 bbls. in one-half hour through open tubing, total depth 3,689 feet.

Upshur County

Conservative Oil Co.'s No. 1 J. N. Tuttle, top sand 3,700 feet, initial production 85 bbls. per hour through three-quarters-inch tubing choke, total depth 3,733 feet. Ellis and Dumas' No. 3 T. Wells, top sand 3,662 feet, initial production 130 bbls. per hour through three-quarters-inch tubing choke, total depth 3,685 feet.

Humble Oil & Refining Co.'s No. 3 H. M. Reeves, top sand 3,661 feet, initial production 54 bbls. per hour through 1-inch tubing choke, total depth 3,666 feet. Magnolia Petroleum Co.'s No. 2 H. Fenton, top sand 3,740 feet, initial production 100 bbls. per hour through 1-inch tubing choke, total depth 3,744 feet. W. H. Pechman and others' No. 1-B Free, top sand 3,714 feet, initial production 18 bbls. in 20 minutes through 1-inch tubing choke, total depth 3,737 feet.

Sabinas Oil Corp.'s No. 5-C T. M. Collins, top sand 3,705 feet, initial production 100 bbls. a day, through one-quarter-inch tubing choke, total depth 3,715 feet; No. 8-C T. M. Collins, top sand 3,654 feet, initial production 60 bbls. per hour through 1-inch tubing choke, total depth 3,671 feet. Shell Petroleum Corp.'s No. 8 C. C. Landers, top sand 3,730 feet, initial production 45 bbls. in one-half hour through open tubing, total depth 3,737 feet; No. 9 C. C. Landers, top sand 3,660 feet, initial production 15 bbls. in one-half hour through 1-inch tubing choke, total depth 3,687 feet. Sun Oil Co.'s No. 2 Hargrove, top sand 3,699 feet, initial production 60 bbls. per hour through open tubing, total depth 3,702 feet. J. A. Woods' No. 1 A. J. Sanders, top sand 3,638 feet, initial production 63 bbls. in one-half hour through three-quarters-inch tubing choke, total depth 3,656 feet.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 26)

Pulse-Shell Pet. Corp.'s No. 1 Wright, 330 ft. from S and W of Sec. 13, Blk. 3, I.&G.N. Sur. ..... Drilled plug and gauged 13,200,000 ft. of gas; S.D. for storage room 2,643 ft.

Saunders et al's No. 2 Sullivan, 822 ft. from W and 231 ft. from NE, 160 ft. S, 264 ac. of N½, Sec. 136, Blk. 3, I.&G.N. Sur. ..... Will plug back to 3,375 ft. and shoot.

Skelly Oil Co.'s No. 24 Schaffer, 440 ft. from W Sec. 172, Blk. 3, I.&G.N. ..... Bldg. rig.

Sullivan & Ochiltree's No. 1-A Morse, 330 ft. S and W, N½ NE, Sec. 15, Blk. A-9, H.&G.N. Sur. ..... S.D. 2,832 ft.

Tarber's No. 1 Saunders, 330 ft. N and W, Sec. 3, Blk. 1, B.B.&S.F. Sur. ..... Location.

Quicksand Oil Co.'s No. 1 Chapman, 250 ft. from N and E. Sec. 69, Blk. 25, H.&G.N. Sur. ..... S.D. 2,692 ft; C.O.; flowing 7 bbls. per hr.

HUTCHINSON COUNTY

Baso's No. 1 Moore, 330 ft. from S and 330 ft. from E, in 80 ac. in NW, Sec. 21, Blk. M-21, T.C.R.R. Sur. .. Rigging up standard tools.

Combination O. & G. Co. and Alspaugh's No. 1 Johnson, 330 ft. from S line, 330 ft. from E line, Sec. 4, Blk. Y, A.&B. Sur. ..... Bldg. rig.

Danciger O. & R. Co.'s No. 1 Johnson, 330 ft. N and W, SE. Sec. 34, Blk. Y, A.&B. Sur. ..... Spudded and S.D.

Deal O. & G. Co.'s No. 2 Sanford, 330 ft. N and E of N 80 ac., S 160 ac., Sec. 81, Blk. 46, H.&T.C. Sur. .. S.D. 450 ft.

Huber Prod. Co.'s No. 1 Johnson Bros. (Premier), 330 ft. N and E of W 60 ac., N 80 ac., NW, Sec. 3, Blk. Y, A.&B. Sur. ..... T.D. 3,116 ft; to plug back.

Harry Stekoll's No. 1 Whittenburg, 1,650 ft. from N. 330 ft. from E. Sec. 89, Blk. Z, G.C.&S.F. Sur. ..... Bldg. rig.

Timms-Deatch's No. 4 Moore, 330 ft. N and W, Sec. 124, Blk. 4, I.&G.N. Sur. ..... Rig.

LIPSCOMB COUNTY

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. ..... T.D. 5,003 ft.

MOORE COUNTY

Dogie Oil Co.'s No. 1 Greenwald, 330 ft. from N and W, Sec. 277, Blk. 44, H.&T.C. Sur. ..... Rigging up rotary.

Interstate's No. 1 Nield, C NE, Sec. 18, Blk. 44, H.&T. C. Sur. ..... Rig up.

Magnolia Pet. Co.'s No. 1 Nield, 330 ft. from S and E of N½, Sec. 361, Blk. 44, H.&T.C. Sur. ..... Drlg. 1,850 ft.

Pollard et al's No. 1 Hall, 330 ft. S and E, NE, Sec. 131, Blk. 3-T, T.&N.O. Sur. ..... Rig on ground.

Sunray Oil Co.'s No. 2 Jones, 330 ft. N and W, W½ SW, Sec. 164, Blk. 3-T, T.&N.O. Sur. ..... Rig on ground.

Texas Interstate P. L. Co.'s No. 1-23 Thompson, C N½ NE, Sec. 23, Blk. 44, H.&T.C. Sur. ..... Location.

Texas Interstate P. L. Co.'s No. 1-37 Sneed, C NW, Sec. 37, Blk. 6-T, T.&N.O. Sur. ..... Location.

Texhoma Nat. Gas Co.'s No. 2-P Sneed, 265 ft. E and 3,685 ft. of SW cor. of M. George Sur. but in Sec. 77, Blk. 3, G.&M. Sur. ..... Drlg. 2,465 ft.

Texhoma Nat. Gas Co.'s No. 4 Coon "M," C SE, Sec. 103, Blk. 44, T.&T.C. Sur. ..... Location.

MOTLEY COUNTY

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. ..... S.D. 530 ft.

OLDHAM COUNTY

Amalgamated German-American Oil Corp.'s No. 1 Norton, 330 ft. S and E, Sec. 12, T.&N.O. Sur. ..... S.D. 400 ft.

Chambers et al's No. 1 Herring, CNL, Sec. 29, Blk. S, G.C.&S.F. Sur. ..... S.D. 3,150 ft. (corrected depth).

PARMER COUNTY

Magnolia Pet. Co.'s No. 1 Wilson, 330 ft. from N and W, SE, Sec. 73, H. Kelly Sur. ..... Drlg. 2,795 ft.

ROBERTS COUNTY

Chicken Creek Oil Co.'s No. 1 Ledrick, 330 ft. N and W, Sec. 55, Blk. C, G.&M. Sur. ..... S.D. 2,690 ft.

Travis et al's No. 1 Cunningham, 330 ft. S and W, Sec. 74, Blk. M-2, H.&G.N. Sur. ..... S.D. 2,650 ft.

WHEELER COUNTY

Clarity et al's No. 1 Porter, 330 ft. S and W, SE, Sec. 2, Blk. A-9, H.&G.N. Sur. ..... S.D. 2,235 ft.

Devore & Robinson's No. 1 Sitter, 2,310 ft. from S and E of E½ of Sec. 33, Blk. 24, H.&G.N. Sur. ..... Estimated 80,000,000 ft. gas; T.D 2,263 ft; drlg. plug.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 26)

FISHER COUNTY

Cranfill & Reynolds' No. 1 George, 400 ft. from N and 380 ft. from E Sec. 200, Blk. 1, B.B.B.&C. Sur. ..... S.D. 3,795 ft.

Cranfill & Reynolds' No. 1 Snipe, 330 ft. from N and W lines of Sec. 195, Blk. 1, B.B.B.&C. Sur. ..... T.D. 3,140 ft.; P.B. 3,112 ft.; est. 35 bbls. day.

Southern Oil Corp. of America's No. 1 Wm. Flannigan, 240 ft. from E and 165 ft. from W line of S 20 acres of SW Sec. 20, B.B.B.&C.R.R. Sur. ..... Setting csg. 375 ft.

GLASSCOCK COUNTY

Mann et al's No. 1 fee, 330 ft. from N and 1,980 ft. from E Sec. 27, Blk. 34, Twp. 3s, T.&P. Sur. ..... Location.

GARZA COUNTY

Penny & Posey's No. 1 Justice, 1,980 ft. from S and 1,680 ft. from E of Sec. 25, Blk. 6, H.&G.N. Sur. (3,500-ft. cable tool test) ..... Fishing for 6⅝-in. csg.; T D 3,320 ft.

HOWARD COUNTY

Green O. & R. Co.'s No. 1 Denman, 990 ft. from S and 2,310 ft. from W Sec. 14, Blk. 20, Twp. 1s, T.&P. Sur. . Spudded and S.D.

L. C. Harrison et al's No. 1 L. C. Denman, 2,310 ft. from S line and 330 ft. from E line of Sec. 10, T.&P.R.R. Sur., Blk. 30 ..... Top pay 2,735 ft., 1 bailer oil per hour from 2,554-68 ft.; S.D. 2,737 ft.

IRION COUNTY

Davis et al's No. 1 Suggs, 1,560 ft. from S and 925 ft. from W Sec. 3,051, Blk. 28, H.&T.C. Sur. ..... Waiting on cmt. to set; T.D. 5,627 ft.

Stanolind Oil & Gas Co.'s No. 1 Williams, 1,320 ft. from S and E of Sec. 1,196, T.T.R.R. Sur. ..... S.D. 6,815 ft.

Straughn & Adkins Bros.' No. 1 Lee, 1,080 ft. from W and 420 ft. from N of Sec. 729, C. Kaiser Sur. ..... S.D. 1,347 ft.

JONES COUNTY

Johnson's No. 1 Huddleston, 165 ft. from S and W of N half of N half of Sec. 89, Blk. 18, T.&P. Sur. ..... Rig up.

Young et al's No. 1 Harrell, 150 ft. from S and E of N half of Sec. 8, O.A.L. Sur. ..... Location.

Abers et al's No. 1 Burton, 150 ft. from S and 175 ft. from E of 43.4-acre tract in G. Martinez Sur. ..... S.D. 1,005 ft.; temporarily abd

LOVING COUNTY

Adams et al's No. 1 Wheat, 330 ft. from SE and SW of Sec. 89, Blk. 1, W.&N.W. Sur. ..... Drlg. 1,495 ft.

Ervin & Mahres' No. 1 Thrope, 2,310 ft. from E and 330 ft. from S Sec. 46, Blk. 53, T.&P. Sur. ..... S.D. 810 ft.

Slack's No. 1 Lynd, 990 ft. NE and 330 ft. SE of Sec. 3, Blk. 2, W.&N.W. Sur. ..... S.D. 4,044 ft.; csg. cmtd.

Falbre & Evans' No. 1 Dean, 330 ft. from NE and 990 ft. from NW Sec. 79, Blk. 33, H.&T.C. Sur. ..... S.D. 2,500 ft.

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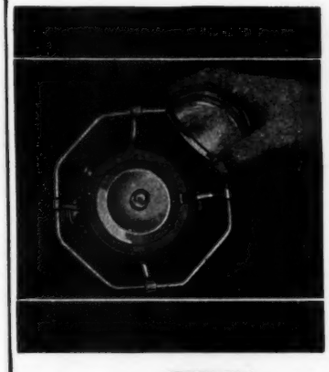

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COLUMBUS, OHIO

Lewis & Siegel's No. 1 Johnson, 330 ft. from N and 1,650 ft. from W Sec. 6, Blk. 56, Twp. 1, T.&P. Sur.—S.D. 250 ft.
Lockhart & Co.'s No. 2 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur.—S.D. 3,385 ft.
Phillips Pet. Co.'s No. 3 Wheat, 330 ft. from SW and 2,310 ft. from SE Sec. 85, Blk. 1, W.&N.W. Sur.—Drlg. 650 ft.
Tennant et al's No. 1 Martin, 990 ft. from NW and SW Sec. 66, Blk. 1, W.&N.W. Sur.—S.D. 4,326 ft.

MENARD COUNTY

Priest's No. 1 Sorrel, 1,000 ft. from E and 700 ft. from S cor. Sec. 132, E.L.R.R. Sur.—S.D. 2,860 ft.

PECOS COUNTY

Anderson's No. 1 Le Fever, 330 ft. from N and W of Sec. 78, Blk. 8, H.&G.N. Sur.—Fishing for bailer 1,925 ft.
Cardinal Oil Co.'s No. 1 J. H. Tippett ("J"), 1,980 ft. from the S line and 990 ft. from the W line of Sec. 2, D. F. Robertson Sur.—S.D. 675 ft.
Corvette Oil Corp.'s No. 7 H. Monroe, 575 ft. from N line and 1,717 ft. from W line, Sec. 39, G.C.&S.F. Sur., Blk. 194—Location.
Culberson Bros.' No. 2-A Monroe, 575 ft. from N and 150 ft. from E Sec. 39, Blk. 194, G.C.&S.F. Sur.—Location.
Dittman's No. 1 Sanford, 330 ft. from NW and 1,650 ft. from NE of Sec. 55, Blk. 10, H.&G.N. Sur.—Drlg. 1,220 ft.
Slaughter et al's No. 1 Sun Yates, 60 ft. S of Sun Oil Co.'s No. 1 Yates, Sec. 59, Blk. 1, I.&G.N. Sur.—Material.

REAGAN COUNTY

Big Lake Oil Co.'s No. 6-C University, 1,370 ft. from S and 1,000 ft. from E Sec. 12, Blk. 2—T.D. 4,810 ft.; drlg. plug 2,420 ft.

REEVES COUNTY

Cunningham et al's No. 1 Wright, 1,320 ft. from S and W Sec. 58, Cassel's Sur.—S.D. 75 ft.
F. McDorman et al's No. 1 Ray Roberts et al, 2,310 ft. from S and E lines of Sec. 22, Blk. 59, P.S.L. Sur.—S.D. 105 ft.
James & Milton's No. 1 Patterson, 330 ft. from N and W of Sec. 31, Blk. 72—S.D. 3,360 ft.
Lee O. White et al's No. 1 Hershersor, 330 ft. from N and W lines of Sec. 5, Blk. 51, Twp. 10, T.&P. Sur.—S.D. 5,044 ft.

RUNNELS COUNTY

Dutton et al's No. 1 Dean, 5,475 ft. from NE and 1,048 ft. from NW in J. Heil Sur. No. 519—S.O. 3,427-20 ft.; S.D. 3,600 ft.

SCHLEICHER COUNTY

Eastland Oil Co.'s No. 1 Joe Tisdale, C Sec. 29, Blk. M, G.H.&S.A. Sur.—Bailing salt 4,522 ft.
Wesner et al's No. 1 Nicks, 2,310 ft. from N and 2,362 ft. from E of Sec. 77, Blk. LL, T.C. Sur.—Drlg. 5,465 ft.
George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,570 ft. from W, G.H.&S.A. Sur.—S.D. 5,053 ft.

SCURRY COUNTY

G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur.—S.D. 5,050 ft.
Scurry County Oil Exchange's No. 1 Earnest, 2,310 ft. from N and W Sec. 68, Blk. 3, H.&G.N. Sur.—Spudded and S.D.
Seifert & Dibble's No. 1 T. M. Blackburn, 2,310 ft. from N and 2,310 ft. from W line of Sec. 153, Blk. 97, H.&T.C. Sur.—Drlg. 3,900 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M-K-T Sur.—S.D. 2,269 ft.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur.—S.D. 3,150 ft.
Miller Bros.' No. 1 Allison & Burke, C NW Sec. 10, Blk. 176, T.&P. Sur.—S.D. 120 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S Sec. 26, Blk. 161, G.C.&S.F. Sur.—S.D. 6,120 ft.
Jones et al's No. 1 Pankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.&R.G.N.G. Sur.—S.D. 2,545 ft.
Sides et al's No. 1 Phelps, 2,157 ft. from N and 2,482 ft. from W Sec. 5, G. W. Hurley Sur.—S.D. 480 ft.

TOM GREEN COUNTY

Andrews' No. 1 Pugh, 250 ft. from N and 5,184 ft. from E, James Eldridge Sur. No. 73—S.D. 453 ft.
Belding & Dutton's No. 1 Norsworthy, 1,640 ft. from S and 587 ft. from E of John McNeese Sur.—S.D. 760 ft.; S.O. and gas 725 ft.
Mintex Oil Co.'s No. 1 Campbell Est., 446 ft. from S and 630 ft. from W of Sec. 180, Dist. No. 11, S.P. Sur.—S.D. 1,994 ft.
Pratt & Hancock's No. 2 Lewis, 100 ft. N and 330 ft. E of most northerly SW cor. of Joshua S. Grant Sur. No. 2—S.D. 200 ft.

VAL VERDE COUNTY

Couch et al's No. 1 J. P. Yoas, 1,300 ft. from the N line and E line of Sec. 31, Blk. 1, I.&G.N. Sur.—Location.
Independent Operators' No. 1 Whitehead, SE SE Sec. 10, Blk. 4, I.&G.N. Sur., elev. 1,175 ft.—S.D. 5,360 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft.—S.D. 6,780 ft.

WARD COUNTY

Abell Bros.' No. 1 Sloan, 330 ft. from NW and NE Sec. 24, Blk. 5, H.&T.C. Sur.—S.D. 2,950 ft.; show oil and gas 2,945-50 ft.
Alpine Oil & Dev. Co.'s No. 4 J. F. Hoogher, 150 ft. from SE line and 150 ft. from the SW line of Tract 16, Sec. 11, Blk. 5, H.&T.C. Sur.—Top pay 2,155 ft.; hole full oil; drlg. 2,190 ft.
Buck Sturm et al's No. 2 R. H. Gill, 2,310 ft. from SW line and 330 ft. from SE line, Sec. 25, Blk. B-29, P.S.L. Sur.—Location.
Eppenauer's No. 1 Purcell, 365 ft. from SW and 1,650 ft. from SE of Sec. 17, Blk. 34, H.&T.C. Sur.—Drlg. 2,405 ft.
H. V. Greer's No. 1 Carr, 150 ft. from NW and 510 ft. from SW Sec. 12, Blk. 5, H.&T.C. Sur.—Drlg. 600 ft.
Gulf Prod. Co.'s No. 9 Hutchings, 330 ft. from N and 1,650 ft. from W of S 370 acres of Sec. 5, Blk. F, G.M.M.B.&A. Sur.—Flowed 125 bbls. in 24 hrs.; drlg. 2,750 ft.
Gulf Prod. Co.'s No. 20 O'Brien, 1,870 ft. from N and 330 ft. from E Sec. 16, Blk. F, G.M.M.B.&A. Sur.—Drlg. 2,536 ft.
Moran & Burkhart's No. 2 J. T. Sweatt et al, 2,310 ft. from the NE line and 1,170 ft. from the NW line of Sec. 12, Blk. 5, H.&T.C. Sur.—S.D. 821 ft.
Moran & Miles' No. 1 Boogher, 3,603 ft. from NE and 1,303 ft. from SE Sec. 11, Blk. 5, H.&T.C. Sur.—S.D. 610 ft.
R. F. Owen's No. 1 Lee, 1,344 ft. from NW and 4,532 ft. from SW Sec. 1, J. Howe Sur.—S.D. 580 ft.
Prairie Oil & Gas Co.'s No. 2 Edmonson, 330 ft. from NW and SW of Sec. 23, Blk. 5, H.&T.C. Sur.—S.D. 2,420 ft.
Rector Oil Co.'s No. 1 Smith, 1,320 ft. from N and E, Sec. 22, Blk. A, G.M.M.B.&A. Sur.—S.D. 3,602 ft.
Sudderth & Carey's No. 1 J. H. Boogher et al, 150 ft. from SW and SE lines of Lot 24, Sec. 11, Blk. 5, H.&T.C. Sur.—S.D. 290 ft.
Shipley et al's No. 1 Monroe, 330 ft. SE SW Sec. 3, Blk. 1—Flows average of 36 bbls. per day; T.D. 4,666 ft.
Stanolind Oil & Gas Co.'s No. 1 Cannon, 2,300 ft. from SE and 1,649 ft. from NE Sec. 29, Blk. B-29—Cellar.
Stanolind Oil & Gas Co.'s No. 1 Weiss, 300 ft. from NW, 300 ft. from NE of S 100 acres, Sec. 4, Blk. 34—Drlg. 2,105 ft.
White et al's No. 1 Burtner, 150 ft. from NE and 515 ft. from SE of Sec. 3, Blk. 32, H.&T.C. Sur.—S.D. 755 ft.

WINKLER COUNTY

Liner Drlg. Co.'s No. 1 Campbell, 350 ft. from N and E cor. Sec. 2, Blk. B-5—S.D. 4,64 ft.
Richardson's No. 1 Sealy, 330 ft. from S and W of Sec. 92, Blk. A, G.M.M.B.&A. Sur.—Drlg. 1,705 ft.
Sid Richardson's No. 1 S. M. Halley, 330 ft. from the S line and 1,650 ft. from the E line, Sec. 25, School Blk. B-12—Drlg. 1,205 ft.

EAST CENTRAL TEXAS WILDCATS

(Continued from Page 25)

GREGG COUNTY

Arkansas Fuel Oil Co.'s No. 1 C. L. Taylor, 295 ft. from N and S lines and 330 ft. from W line of E 21.94 acres of S 39.76 acres of 114.76-ac. tract, W. H. Castleberry Sur.—Drlg. 3,037 ft.
Atlantic & Pacific's No. 1 Ed Harvey, center of SE one-half of Blk 30, H. R. Hokit Sur.—Drlg. 2,843 ft.
Barnsdall Oil Co.'s No. 1 Grant Benson, 330 ft. from S and E lines of 50ac. tr., W. P. Chisum Sur.—Location.
Barnsdall Oil Co.'s No. 1 Adams, 330 ft. S and E of NE cor. of Shell's Slaton lease, G. W. Hooper Sur.—Location.
Beard et al's No. 1 J. J. Fuller, 330 ft. from S and W lines of 69.7-ac. tract, M. Alexander Sur.—Location.
Brown et al's No. 1 Florence, 150 ft. from N and W lines of 2.58-ac. tract, Mary Van Winkle Sur.—Derrick.
Will Brown's No. 1 E. Choice, 400 ft. due east of Collins' No. 1 H. T. Elder—Derrick.
Buchanan et al's No. 1 Geo. Ritchie, 120 ft. N and 15 ft. W of Monnell and Currie's No. 1 Church, Blk. No. 4, M. Dillard Sur.—Derrick.
Bob et al's No. 1 T. L. Bray, 290 ft. from E and 1,640 ft. from S of H. A. Holdt Sur.—Derrick.
M. T. Beeler's No. 1 Finley and Thomas, 150 ft. from N and 150 ft. from W of 10-ac. lease, C. H. Alexander Sur.—Derrick.
Bridwell and Fikes' No. 1 D. Lockett, 284 ft. E, 326 ft. N of SW cor. of 25-ac. lease, D. Ferguson Sur.—Drlg. 2,940 ft.
Byrd-Frost Oil Co.'s No. 1 Alexander and Strong, 330 ft. from S and E lines of 26-ac. tract, M. Tennison Sur.—Derrick.
Central Com. Oil Co.'s No. 1 A. A. King, 233 ft. from S and 330 ft. E of NW cor. of 133-ac. lease, M. Tennison Sur.—Derrick.
Danciger Oil & Ref. Co.'s No. 1 S. Ball, located on a 2-ac. tract, Mary Van Winkle Sur.—Derrick.
Demotte et al's No. 1 T. L. Bray, center of Blk. No. 8, H. R. Holit Sur.—Location.
Dodd and Markey's No. 1 J. F. Holt, 615 ft. E and 707 ft. N of SW cor. of 200-ac. tract, H. Edwards Sur.—Derrick.
W. L. Duninger's No. 1 C. C. Stoen, 350 ft. from S and E lines of 59-ac. tract, J. Baty Sur.—Derrick.
East Texas Refining Co.'s No. 1 Tom Christian, center of lease, G. W. Hooper Sur.—Location.
Empire Gas & Fuel Oil Co.'s No. 1 V. L. Taylor, 330 ft. from N line and 352 ft. from W line of 40.85-ac. lease, M. Tennison Sur.—Rig up.
F. H. E. Oil Co.'s No. 1 J. M. Christian, 330 ft. from S line and center of E and W lines of E 7.5-ac. tract, G. W. Hooper Sur.—Location.
Fither et al's No. 1 F. Thomas, 160 ft. from S line and 150 ft. from W line of 10-ac. lease, C. H. Alexander Sur.—Spudding.
Glasscock Bros.' No. 1 E. Bade, 157 ft. from S line and 409 ft. from W line of lease, G. W. Hooper Sur.—Derrick.
Lewis Godlin's No. 1 E. L. Walker, 330 ft. N of road, 330 ft. from E line of 80.2-ac. tr., M. Dillard Sur.—Derrick.
D. M. Hester's No. 1 Crews, 299 ft. W and 166 ft. S of SE cor. of William W. Friar Sur.—Derrick.
Hankamer and Lee's No. 1 T. W. Lee, 150 ft. from S line and 238 ft. from E line of lease, L. J. Risby Sur.—Drlg. 1,140 ft.
D. L. Hoffman's No. 1 B. F. Phillips, 330 ft. from E line and center of N and S lines of 16.5-ac. tract, D. Ferguson Sur.—Derrick.
Cox Huffman's No. 1 Johnson, center of Blk. No. 10, Gladewater Townsite, H. R. Hokie Sur.—Location.
Jackson and Bradstreet's No. 1 M. Young, center 2-ac. tr., J. R. Crosby Sur.—S.D. 200 ft.
Kroll's No. 1 J. Spear, center ¾-ac. lease, Blk. 4, Mary Van Winkle Sur.—Drlg. 1,050 ft.
K. B. Oil Co.'s No. 1 Dickson, 150 ft. from S and 150 ft. from W of 5-ac. lease, Mary Van Winkle Sur.—S.D. 700 ft.
F. L. Luckel's No. 1 J. B. Doby, 152 ft. from N and S lines and 157 ft. from E and W lines of E 2½ acres of Love 6.6-ac. lease, W. H. Castleberry Sur.—Spudded.
Lucy Petroleum Co.'s No. 1 B. C. Christian, 330 ft. from W line and center of N and S lines of 8-ac. lease, G. W. Hooper Sur.—Location.
McBride's No. 1 F. Elder, 205 ft. N and 320 ft. W of SE cor. of 2½-ac. lease, John Wilkerson Sur.—Derrick.
Natalie Kimsey's No. 1 C. C. Crews, 330 ft. from N line and center of E and W lines of 60-ac. tr., L. Perkins Sur.—Derrick.
Patrick Pet. Co.'s No. 1 Watson, 330 ft. from N line, 330 ft. from E line of lease, M. V. Winkle Sur.—Derrick.
J. D. Patty et al's No. 1 J. C. McCormick, 207 ft. SE at right angles to Gladewater-Tyler road and 540 ft. SW of Abernathy and Kirkpatrick's No. 1 Gregston, M. Dillard Sur.—Derrick.
Pilot Oil Co.'s No. 1 J. C. Bumpass, 330 ft. from S and W lines of 25-ac. lease, W. H. Castleberry Sur.—Spudding.
Rajo Oil Co.'s No. 1 Barrett, 356 ft. from S line and 330 ft. from W line of Shell's 80-ac. lease, Witcher Sur.—Location.
J. C. Roger's No. 1 John Boyd, center of Blk. 12, Gladewater Townsite, H. R. Hokit Sur.—Drlg. 2,430 ft.
Ross et al's No. 1, located on Findley & Thomas 50-ac. tr., 150 ft. from S line and 6.66-ac. lease, C. H. Alexander Sur.—Derrick.
Shasta Oil Co.'s No. 1 Campbell, 330 ft. from N and E lines of 74-ac. tract, D. Ferguson Sur.—Waiting on cmt. to set 3,575 ft.
Shell Pet. Corp.'s No. 1 B. F. Laird, N offset to Robertson's No. 1 Elder, John Wilkerson Sur.—Derrick.
Shell Pet. Corp.'s No. 1 S. C. Fishborn, 330 ft. from N and E lines of 100-ac. lease, F. W. Johnson Sur.—Location.
Sneed et al's No. 1 Griffin Davis, 28 ft. W and 278 ft. N of SW cor. of Gulf's Davis lease, W. F. Chisum Sur.—Location.
Stanolind Oil & Gas Co.'s No. 1 A. A. Lockhart, 400 ft. from S and E lines of 20.92-ac. tract, M. Tennison Sur.—Bldg. derrick.
Sun Oil Co.'s No. 1 Calvin Brown, 330 ft. from most southerly S line and middle of E and W lines of lease, L. B. Outlaw Sur.—Drlg. 3,546 ft.
Sun Oil Co.'s No. 1 J. E. Rollins, 1,492 ft. from N line, 1,492 ft. from S line, 589 ft. from W and E lines of 85-ac. lease, M. Scott Sur.—Drlg. 2,631 ft.
Tom C. Patten's No. 1 Geo. Walter, center of 1-ac. tr., and 396 ft. from W line of lease, Mary Van Winkle Sur.—Location.
Travis and Wair's No. 1 A. B. Loughridge, 330 ft. from S line, 590 ft. from E line of 30-ac. lease, Thomas Johnson Sur.—Drlg. 2,931 ft.
Valentine Oil Co.'s No. 1 Goyne-Hughey, 6,100 ft. from S and 6,800 ft. from W of survey, Mary Van Winkle Sur.—Rigging up.
Woodley Petroleum Co.'s No. 1 D. B. Harris, 150 ft. S of highway and 1,050 ft. from E line of survey, W. H. Castleberry Sur.—Drlg. 2,902 ft.

HENDERSON COUNTY

Alma Pet. Co.'s No. 1 T. B. Woodford, located on 529.5-acre tract, 2,500 varas from W line and 1,050 varas from N line of survey, Boly C. Walters Sur.—Drlg. 3,620 ft.
South American Drlg. Co.'s No. 1 D. R. Broone, 330 ft. from N and W lines of SE 40 acres of 425-ac. tr., Thomas Parmer Sur.—S.D. 4,374 ft.

HILL COUNTY

Sherman-Houseman's No. 1 J. F. Griffith, in Samuel Waddell Sur. ..... Fishing 3,256 ft.

HOPKINS COUNTY

B. L. Chapman's No. 1 J. D. Jumper, 175 ft. from N line, 285 ft. from W line of lease, Jas. Webb Sur. .. S.D. 230 ft.
Roark et al's No. 1 Taylor, 220 ft. from N and W lines of 80-ac. tr. in the John Polk Sur. ..... S.D. 540 ft.

HOUSTON COUNTY

Apex Drlg. Co.'s No. 1 Thompson Bros., 250 ft. out of NW cor. of 200-ac. tr. in John Shears Sur. ..... T.D. 2,364 ft.
Ramsland and Ramsland's No. 1 Pennington, 750 varas W of E line and 600 varas from S line of survey on 186-ac. tr., Ramond LaGarza Sur. ..... S.D. 1,692 ft.
C. T. McManus' No. 1 Harron, 300 ft. out of NE cor. of 327-ac. tr., J. P. Procella Sur. ..... Spudded and S.D. 37 ft.

HUNT COUNTY

Branson et al's No. 1 Gray ..... Location.
Russell et al's No. 1 Brooks and Quattlebaum..... S.D. 1,455 ft.

KAUFMAN COUNTY

Hoffpier et al's No. 1 Kaufman County Farm, 210 ft. from N line, 672 ft. from W line of 524-ac. tract, D. Falcon Sur. ..... Derrick.
Standy Darnell et al's No. 1 Sally Pannill ..... Drlg. 1,260 ft.

LAMAR COUNTY

G. W. Davy et al's No. 1 McGustion, 450 ft. from S line, 450 ft. from W. line of farm and survey, Galet Wood Sur. ..... Drlg. 1,920 ft.
Optometrist Oil Club's No. 1 J. M. McFadden, 450 ft. from S and W lines of McFadden E 25-ac. tr., J. Deck Sur. ..... Drlg. 1,825 ft.

LEON COUNTY

Cooper et al's No. 1 Lynch, 4,000 ft. from W line and 250 ft. from S line of Thos. H. Gardner Sur., and in 200 ac. tr. ..... S.D. 1,931 ft.
Salzer Drlg. Co.'s No. 1 Dr. J. M. Blair, 1,010 ft. from N line, 1,986 ft. from W line, Sec. 19, Blk. E, Lucia Hibbard Sur. ..... Derrick on ground.
Sun Oil Co.'s No. 2 Grayson ..... S.D. 6,018 ft.

MORRIS COUNTY

Dumas et al's No. 1 Tom Ball, 1,046 ft. from E and 248 ft. from S of 71-ac. tr., A. S. Young hrs. Sur. .. Derrick.

NACOGDOCHES COUNTY

Bunte et al's No. 1 A. F. Boatman, 330 ft. from S and 150 ft. from W of 67-ac. tr., Wm. A. Moore Sur. .... S.D. 1,605 ft.
G. A. Teague's No. 1 Norris, 60 ft. NW of E line and 420 ft. S of road in 73.5-ac. tr., Hossea Y. Barbo Sur.. Derrick.
Gainer et al's No. 1 Nice Well, 18 miles SE of Nacogdoches, 600 ft. from S and 150 ft. from W of Wells tract in A. Cherino Sur. ..... S.D. 3,430 ft.
Joiner and Henson's No. 1 Andy Legg, 320 ft. from N and 330 ft. from W of tract, John Durst Sur. ..... S.D. 3,920 ft.
Scully & Harwell's No. 1 R. I. Driver, 1,500 ft. from SE cor. of P. B. Ballard 125-ac. tr., 15 miles SE of Nacogdoches in Patricia De Torres Sur. ..... S.D. 3,316 ft.; (corrected).
Taylor-Vaughn's No. 1 Dixon Greer, 160 ft. from W and 450 ft. from N lines of 60-ac. tr. in the M. G. Horrera Sur. ..... S.D. 265 ft.
Creighton Drlg. Co.'s No. 1 J. N. Stewart, center of 79-ac. tr. in the Jose Ignacio Y'Barbo Sur. ..... S.D. 3,226 ft.

POLK COUNTY

Humble O. & R. Co.'s No. 1-A Onolaska Live Stock, 1,700 ft. NW along property line from most northerly E cor. of survey and 75 ft. SW at right angles, Wm. B. Hardin Sur. ..... S.D. 3,160 ft.
Sunshine Oil Co.'s No. 1 Brawley, 150 ft. from S line and 250 ft. from E line of W 100 acres of lease, F. Johnson Sur. ..... Location.

RAINS COUNTY

C. H. Bayliss' No. 1 Ownby, 150 ft. N and 1,100 ft. from E of most easterly SE cor. of survey, Alexander Sur. ..... S.D. 4,036 ft.

RED RIVER COUNTY

Droppleman and Bundy's No. 1 J. W. Cunningham, 250 ft. from the S and 1,066 ft. from the E lines of B. M. Ballard Sur. ..... Rig up.
Gibbs et al's No. 1 Mace (old well being drilled deeper), 1,200 varas from S line, 1,500 varas from E line of survey, Wm. Cullam Sur. ..... S.D. 3,500 ft.
Hoffman and Henson's No. 1 H. H. Lennox, 2,790 ft. W and 300 ft. S of most easterly NE cor. of survey, J. E. Edmondson Sur. ..... S.D. 60 ft.
Harris & Joiner's No. 1 E. Howison, 225 ft. S, 185 ft. W of 79-ac. tr., Wm. Humphreys Sur. ..... S.D. 1,940 ft.
Concord Oil Co.'s No. 1 J. R. Dellahunty, 500 ft. from N of Isaac Moore Sur. and 200 ft. E of E line of Robert Glass Sur. ..... S.D. 2,500 ft.
L. G. Priest's No. 1 J. M. Stiles, 900 varas S and 500 varas E most northerly NE cor. of Jones Bankston Sur. in the Levi Dean Sur. ..... S.D. 1,100 ft.

ROCKWALL COUNTY

Bucanner Oil Co.'s No. 1 H. L. Lofland, center of 69-ac. tr. in W. M. Bird Sur. ..... Set 10-in. csg. 120 ft.

RUSK COUNTY

C. L. Archer's No. 1 J. H. Stewart, center of 2-ac. tract, E. Thompson Sur. ..... Drlg. 1,100 ft.
Barney Carter's No. 1 Jessie Cole, 225 ft. from N line and 160 ft. from E line of 5-ac. tract, D. Shaw Sur. ..... Derrick.
S. P. Borden's No. 1 T. O. Mason, center of 3.5-ac. lease, J. B. DeCadena Sur. ..... Drlg. 3,649 ft.
Roy Bryant's No. 1 Daisy Bradford, 110 ft. from S line, 150 ft. from W line of 7-ac. lease, Juan Ximines Sur. ..... Running tubing 3,725 ft.
Byrd-Frost's No. 1 Buckner, J. E. Peyton Sur. ..... S.D. 2,840 ft.
Gulf Production Co.'s No. 1 J. W. Shaw, 330 ft. from S and W lines of 89.8-ac. tract, F. Cordova Sur. .... Location.
Hale and Hatchfield's No. 1 C. J. Goforth, 625 ft. from S line and 450 ft. from W line of 13.4-ac. tract, M. J. Pru Sur. ..... Rig up and S.D.
Hathaway et al's No. 1 Gray, J. M. McLain Sur. ..... Coring 3,150 ft.
H. E. Hilden's No. 1 Varney, 100 ft. from N line, 125 ft. from E line of road, W. G. Tutt Sur. ..... Derrick.
Howell's No. 1 Irion and Motley, 200 ft. from N line, 1,270 ft. from W line of survey, J. Lindley Sur. .... Spudding.
Humble Oil & Refining Co.'s No. 1 E. W. Naulls, 330 ft. from S and W lines of 73.5-ac. tract, T. J. Martin Sur. ..... Location.
Humble Oil & Ref. Co.'s No. 1 Mrs. V. E. Reed, 330 ft. from S line and 330 ft. from W line of 70-ac. lease, T. J. Martin Sur. ..... Drlg. 3,666 ft.
A. W. Jones Oil Co.'s No. 1 J. M. Grant, 346 ft. from S line, 1,076 ft. from E line of 100-ac. tr., T. J. Walling Sur. ..... Fishing 2,410 ft.
La. O. & R. Co.'s No. 1 Jernigan, 330 ft. from S line, 1,033 ft. from W line of 100-ac. lease, McCabe Sur... Rigging up.
LaSalle-Davenport and Bledsoe's No. 1 Church, 175 ft. S and 175 ft. E of SE cor. of Sun-Schuler joint lease, J. B. DeCadena Sur. ..... Moving in material.
Magnolia Pet. Co.'s No. 1 S. W. Moore, 285 ft. from N and E lines of 29.75-ac. tract, J. B. DeCadena Sur. ..... Waiting on cmt. to set 3,640 ft.
Moss and Urschel's No. 1 H. L. Griffin, 200 ft. from N line and 150 ft. from W line of 20-ac. lease, Juan Ximenes Sur. ..... Location.
W. H. McMurray's No. 1 Blackwell, 238 ft. W and 247 ft. N of most westerly NE cor. of Stone's 169-ac. tr., M. J. Pru Sur. ..... 16 degrees off; plugged back to 1,200 ft.; waiting on cmt. to set.
Mid-Kansas Oil & Gas Co.'s No. 1 W. T. Grissom, 330 ft. from N line, 330 ft. from W line of lease, J. B. Brown Sur. ..... Derrick.
Albert Nathan's No. 1 Deason, center of 5-ac. tract, Juan Ximenes Sur. ..... Drlg. 3,200 ft.
Overton Ref. Co.'s No. 1 fee, 105 ft. NW of Patton Rhodes' No. 1, F. Cordova Sur. ..... Drlg. 3,350 ft.
Geo. L. Pace's No. 1 E. B. Alford, center of 5-ac. lease, T. J. Moore Sur. ..... Drlg. 1,675 ft.
Pitzer and West's No. 1 Mattie Giles, 150 ft. from S line, 100 ft. from E line of 13.7-ac. tr. on a 1-ac. lease, M. J. Pru Sur. ..... Swabbing; T.D. 3,701 ft.
J. T. Reese's No. 1 Marshall Clay, 330 ft. from N and W line of 65-ac. lease, Juan Ximenes Sur. .... Rig up.
Ross Seward's No. 1 Burton, J. J. Y'Barbo Sur. ..... Fishing 3,077 ft.
Shasta Oil Co.'s No. 1 H. Alexander, 330 ft. from N and W lines of 30-ac. lease, T. Grace Sur. ..... Drlg. 3,687 ft.
Sinclair Oil & Gas Co.'s No. 1 W. H. McCord, 144 ft. from N line and 330 ft. from W line of lease, J. B. DeCadena Sur. ..... Rig up.
Stanolind O. & G. Co. and Pure Oil Co.'s No. 1 R. A. Moores, 330 ft. from S line, 2,378 ft. from W line of 210-ac. tr., J. B. DeCadena Sur. ..... T.D. 3,612 ft. in sand.
Stanolind and Pure Oil Co.'s No. 1 Rase Lacy, 330 ft. from N and E lines of 100-ac. tract, J. H. Sparks Sur. ..... Top Pecan Gap 2,614 ft.
Sullivan and Burch's No. 1 E. B. Alford, 550 ft. W, 150 ft. S of NE cor. of 75.75-ac. tr., Isaac G. Parker Sur. ..... Drlg. 3,570 ft.
The Texas Company's No. 1 W. W. Henry, 330 ft. from S and E lines of 229-ac. tract ..... Derrick.
M. L. Thompson's No. 1 Price, Hugh Million Sur. ..... S.D. 3,280 ft.
Tulsa Oil Co.'s No. 1 J. R. Iron, 330 ft. from S line and 343 ft. from E line of lease, John Womack Sur. ..... Drlg. 3,771 ft.

JOINER POOL—RUSK COUNTY

Armstrong's No. 1 Alford, 151 ft. from S and 1,080 ft. from W of survey, T. J. Moore Sur. ..... Derrick.
Paulett et al's No. 1 Ed Sparks, 350 ft. from E, 150 ft. from S of survey, L. C. Riggs Sur. ..... Bailed dry after small show of gas: T.D. 1,313 ft.

SAN AUGUSTINE COUNTY

Smith and Baker's No. 1 Pickering Lbr. Co., 6 miles N of San Augustine, E. Quick Sur. ..... Derrick.

SMITH COUNTY

Bunte et al's No. 1 Atkinson, 1,000 ft. from S line and 1,000 ft. from N line of 330-ac. tr., Calloway Dean Sur. ..... Derrick.
Joiner et al's No. 1 C. S. Jackson, 500 ft. from N and 500 ft. from W of 39.88-ac. tr., Henry Mickleborough Sur. ..... S.D. 4,043 ft.
Tytex Oil Co.'s No. 1 Alex Weldert, 2,030 ft. from S line, 525 ft. from E line of Franklin T. Bodenheimer Sur. ..... Derrick.

TITUS COUNTY

Perry V. Cook's No. 1 M. C. Rogers, center of SW of Moore Sur. ..... T.D. 3,345 ft.
Joiner et al's No. 1 Clayton Brown, 1,300 ft. from E and 400 ft. from most northerly S line of V. Evans Sur... S.D. 2,250 ft.

UPSHUR COUNTY

L. G. Bradstreet et al's No. 1 O. M. Victory, 330 ft. from N and E lines of 10-ac. lease, E. A. J. Evans Sur. ..... Location.
Cranfill & Reynold's No. 1 Milton Rash, 1,687 ft. E of W line and 330 ft. N of S line of Rash estate, E. N. Eubanks Sur. ..... T.D. 3,728 ft.; S.D.
Danciger Oil & Ref. Co.'s No. 1 Stinchomb, 1,110 ft. from S line and 350 ft. from W line of lease, Marshall Mann Sur. ..... Drlg. 2,260 ft.
Falvey et al's No. 1 S. D. Rodden, 227 ft. from N line and 330 ft. from E line of 20-ac. lease, M. Mann Sur. ..... Location.
Gillett-Tarr and Potter's No. 1 D. A. Irion, 330 ft. from N line and center of E and W line of tract, D. A. Lucas Sur. ..... S.D. 909 ft.
Hawkeye Pet. Co.'s No. 1 H. Fenton, 330 ft. from W line and center of N and S lines of 13.5-ac. tr., G. W. Hooper Sur. ..... Waiting on cmt. to set 3,742 ft.
H. C. Hurley's No. 1 W. F. Smith, 330 ft. from E line and center of N and S lines of S 25 acres of W 50 acres of 100-ac. tr., J. Pineda Sur. ..... Rig up.
Jackson and Bradstreet's No. 1 Victory, center of 25-ac. lease, E. A. J. Evans Sur. ..... Base of Austin chalk 3,590 ft.
J. W. Love's No. 1 Bain, 200 ft. from N line, 2,093 ft. from W line of survey, W. H. Williams Sur. ..... Drlg. 3,260 ft.
Pilot Oil Co. et al's No. 1 J. D. Ray et al, 1,050 ft. from N line, 950 ft. from S line, 990 ft. from W line of 218-ac. tr., A. H. Wood Sur. ..... S.D. 3,360 ft.
Stanolind Oil & Gas Co.'s No. 1 Arthur Newsom, 900 ft. from S line and 990 ft. from E line of 32.33-ac. tract, Calvin Anderson Sur. ..... Fishing 3,017 ft.
Steen Drlg. Co. and Shell Pet. Corp.'s No. 1 J. F. Phillips, 330 ft. out of most southerly SE cor. of 94-ac. tract, J. M. Pineda Sur. ..... Drlg. 3,265 ft.
L. E. Trout et al's No. 1 O. M. Victory, 330 ft. from S and E lines of 60-ac. lease, E. A. J. Evans Sur..... Derrick.
Wolf's No. 1 Cook, center of 115-ac. tr. in Jacob Walker Sur., 5 miles W of Rosewood ..... S.D. 1,100 ft.

VAN ZANDT COUNTY

Barton et al's No. 1 C. L. Hubbard, 600 ft. out of NE cor. of Hubbard 225-ac. tr., 3½ miles S of Canton, M. J. DeCadena Sur. ..... S.D. 2,104 ft.
Kelly O. & G. Co.'s No. 1 Lemsford, center of Lemsford tr., John Conner Sur. ..... S.D. 2,300 ft.
Thomasson, Inc.'s No. 2 W. P. Forster, 600 ft. from N and 450 ft. from E of SW cor. of Forster 151-ac. tr. in the F. Montgomery Sur. ..... S.D. 3,200 ft.
Priest et al's No. 1 B. G. Beckham, 150 ft. from S line, 33 ft. from W line of 100-ac. tr., A. S. Johnson Sur.. S.D. 4,900 ft.
Pure Oil Co.'s No. 2 Mrs. C. White, 250 ft. E of W line, 250 ft. S of N line, John Walling Sur. ..... Derrick.
Pure Oil Co.'s No. 1 D. F. Cade, 250 ft. N of S line of 45.3-ac. tract in Nacogdoches County School Land Sur. ..... Drlg. 375 ft.
Pure Oil Co.'s No. 1-T V. T. Davis, 400 ft. N of N line of Tunnell No. 8 lease, 480 ft. W of E line of survey, Nacogdoches County School Land Sur. ..... Driving on stuck pipe 2,900 ft.; T.D. 6,482 ft.
Pure Oil Co.'s No. 4 W. H. Cook, 225 ft. S of N line, 604 ft. W of E line of 31-ac. tract, Mund Gross Sur... Coring 2,894 ft.
Pure Oil Co.'s No. 6 M. F. Shirley, 150 ft. S of N line, 150 ft. W of E line of base, John Walling Sur. ..... Drlg. 2,795 ft.
Pure Oil Co.'s No. 4 R. H. Peters, 670 ft. W of E line and 200 ft. S of N line of lease, Nacogdoches County School Land ..... Ready to wash in 2,939 ft.
Pure Oil Co.'s No. 9 F. B. Smith, 1,180 ft. E of W line and 150 ft. N of S line, John Walling Sur. ..... Location.
The Texas Co.'s No. 2 R. V. White, 200 ft. N of S line, 250 ft. W of E line of base, John Walling Sur. ..... Moving in tools.
Van Oil Association's No. 1 Tankersley, 300 ft. from E and 1,000 ft. from S of farm, L. Landers Sur. ..... S.D. 2,850 ft.

WOOD COUNTY

Talko Oil Co.'s No. 1 G. T. Ross, B. L. Smith Sur. ..... S.D. 1,550 ft.
Wood County Dev. Co.'s No. 1 Davis, approximately 180 ft. from S line of 160-ac. tr. and 2½ miles S of Kantes in Sarah McDonald Sur. ..... Derrick.
Yankee Oil Co.'s No. 1 Davis, 330 ft. from S of SW cor. of M. Ryan, Jr. Sur. ..... Bldg. derrick.

For tanks and all metal surfaces

USE PURE LEAD PAINT

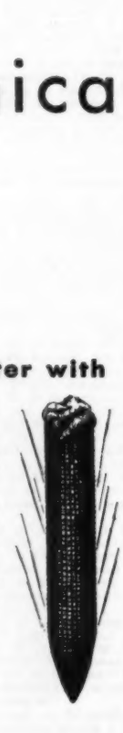
(Eagle Sublimed Blue Lead) for economical rust prevention . . .

Sublimed Blue Lead has had a remarkable success wherever it has been tried in the oil industry. It makes a pure lead, rust-preventive paint with very marked advantages. Quickly thinned to paint consistency, to meet the exact requirements of each job. *Does not harden or liver in the container.* Grips metal surfaces tenaciously, preventing rust and corrosion. Indispensable for priming coat on all metal surfaces, as well as for the top coat. (Painters like it.) Has excellent covering power. Being pure lead, it is the most enduring paint. And its cost per square foot of surface protected is considerably less than other high quality metal paints.

Investigate Sublimed Blue Lead before planning your next metal-paint job. A postcard or letter will bring you a free copy of an interesting booklet "Rustproofing with Sublimed Blue Lead."

Fight bottom water with Eagle Lead Wool

Lead Wool is the efficient, economical, quick method of plugging off bottom water. Fills every water crevice. Sold by dealers with Cartridge Containers to fit all casing sizes. Free folder on request.



THE EAGLE-PICHER LEAD COMPANY

GENERAL OFFICES: CINCINNATI

PRODUCERS OF LEAD, ZINC AND ALLIED PRODUCTS

Brief Items for Petroleum Refiners

Engineering Work on French Refinery Starts Immediately

Engineering work on the new refinery to be built in France by the Compagnie Francaise de Raffinage, the manufacturing and distributing subsidiary of Compagnie Francaise des Petroles, is to start immediately. Arthur G. McKee & Co. of Cleveland, Ohio, through their associates, the Schneider et Cie, Paris, have been awarded the initial contracts in connection with the refinery, for the construction of which $15,000,000 ultimately will be spent. The McKee engineers will leave for France in March.

The McKee-Schneider contracts call for the design and construction of primary crude oil distillation equipment at a cost of approximately $1,000,000. The equipment is for the Normandy refinery to be erected at le Harve on the Tancarville canal, the first of two large refineries which ultimately will supply a large portion of the French refined petroleum requirements.

The French government has certain vested rights in the Compagnie Francaise des Petroles and has a preferential right to purchase finished products from Compagnie Francaise de Raffinage. The refinery will utilize the French share of the Iraq oil output. Following the World War, Great Britain was given the mandate over Mosopotamia, with its rich oil possessions. Later, France and the United States each obtained a share in the Iraq oil. The American share is controlled by the Standard Oil Co. of New

(Continued on Page 164)

TO INSTALL EQUIPMENT TO USE REFINERY GAS

The Brooklyn Union Gas Co., of Brooklyn, N. Y., has awarded a contract for the installation of piping and equipment to handle gas from the Greenpoint, N. Y., refinery of the Standard Oil Co. of New York. The equipment will be used in connection with the U.G.I. Reforming Process for reforming the refinery gas in connection with the operation of six existing carburetted water gas sets at the Greenpoint works of the Brooklyn company. The contract for the installation of the equipment was awarded to the United Engineers & Constructors, Inc., of Philadelphia, Pa.

The equipment will consist generally of high-pressure holders, meter, regulators, hot scrubbers, naphthalene scrubbers, oil gas lines and connections, and also the necessary changes to the water gas sets, so that U.G.I. Reforming Process can be used. The apparatus will be designed to handle in excess of 4,000,000 cubic feet of refinery gas per day.

The installation will be similar in design to the Chester, Pa., plant, where refinery oil gas was used in this way for the first time. By means of the U.G.I. Reforming Process, refinery oil gas of a specific gravity of 1.0 and a heating value of about 1,600 B.t.u. per cubic foot is converted into a gas of lower gravity and heating value suitable for distribution in place of carburetted water gas or as a mixture with coal gas.

INSTALL CRACKING UNIT

NEW YORK, Jan. 23.—A Soviet vapor phase cracking plant began operations recently at Baku, which was remodeled from a liquid phase unit of the Shukov-Kapelushnikov type, according to reports received here. The new cracking unit operates under a low pressure (from 3 to 5 atmospheres) and the product is reported to be of higher quality than the yield of the former plant.

CHANGES UNDER WAY IN WEST COAST REFINERY OPERATIONS

LOS ANGELES, Calif., Jan. 25.—Developments during the past few days indicate a strong possibility that the preliminary gasoline price war that has been brewing on the Pacific Coast during the past few weeks may be climaxed in the near future by a strengthening of prices instead of resulting in another spring house cleaning. It may be another few weeks before any tangible evidence of an improvement can be noted due to substantial subsurface storage in superservice stations accumulated at low prices.

It is the general belief among progressive independent refiners that marketing conditions will be greatly improved. The Rio Grande Oil Co. recently closed a big deal with an unnamed company whereby it will be able to reduce its present stock before next summer. The Rio Grande has 1,000,000 bbls. of gasoline and 950,000 bbls. of crude oil in storage at present. Under the terms of the new deal gasoline stocks will be cut to 150,000 bbls. and crude oil stock to 250,000 bbls. by the first of next August. The Rio Grande has from time to time in the past been obliged to cut gasoline prices but will not be faced with this necessity in the future.

Shut Down Signal Plant

Another big deal involving the Signal Oil & Gas Co. and the Standard Oil Co. has been completed within the past few days. This deal involves an exchange of products and will permit the Signal to shut down its refinery as all of its current requirements will be supplied by the Standard. The Signal Oil & Gas Co., successor to the Signal Gasoline Co., is a substantial producer of natural gasoline and during recent months has been buying approximately 5,000 bbls. of crude oil per day. Under the terms of the new contract Signal will exchange its natural gasoline for motor fuel and purchase its additional requirements from Standard. The latter agrees to assume all of the former's crude oil purchase contract as well as any crude produced by Signal. The Signal has been liquidating present stock and will shut down its refinery as soon as this is done. The Signal sold a little less than 2,500,000 gallons of gasoline during December.

Shell and Anglo-Persian to Merge British Marketing

NEW YORK, Jan. 23.—Shell Mex and B. P., Ltd., operating company formed to consolidate the activities of Anglo-Persian and Royal Dutch-Shell in Great Britain, has issued the following announcement of its program:

"From January 1 Shell-Mex, Ltd., and the British Petroleum Co., Ltd., are associated in a new company under the title of Shell-Mex and B. P., Ltd. These companies are the marketing organizations of the Shell group and of the Anglo-Persian group, respectively.

"At the same time as the vast oil producing and refining resources of the Shell group and the Anglo-Persian group have been developed, detailed marketing organizations have been built up by them in the United Kingdom by the expenditure of large sums of British capital in order to meet from year to year the progressive requirements of the country for petroleum products.

"The association is a piece of constructive nationalization having for its object a joint organization to continue the efficient service already rendered to the

(Continued on Page 164)

SEEKING OUTLETS FOR WYOMING BLACK CRUDE

CASPER, Wyo., Jan. 23.—Additional outlets are in prospect for the black oil in Big Horn country of Wyoming, the supply of which is rapidly increasing. Reports from Billings, Mont., state that 1,250 bbls. of the oil have been shipped to a refinery located at that point in order to make test runs.

The Midwest Refining Co. recently contracted with the Ohio Oil Co. for a large quantity of the oil which will be shipped to the company's refinery located at Greybull, Wyo. The Midwest company is installing special cracking equipment to handle the crude oil.

Portland Association, Inc.'s No. 1 Beartooth, SE NE SE Section 29-56-97, Garland Dome, in Big Horn County, which blew in last September at 4,304 feet, making 30,000,000 feet of gas, with an estimated oil production of 1,000 bbls. daily, has been harnessed after extensive work on the well over a period of months. It is now under control and appears to be a much better well than at first estimated. It is now rated at 5,000 bbls. per day from 300 feet of saturated lime in the Madison.

The well is two locations north of Ohio Oil Co.'s No. 1 Easton, the discovery well in the Madison, which was rated good for at least 5,000 bbls. This well is on a lease owned by the Montana-Wyoming Oil Co. Only three producing wells have been drilled to the lime on this structure, one of the largest in Wyoming, but additional drilling is in prospect just as soon as there is a better demand for black oil.

REPORT WATER MOVEMENT

WASHINGTON, D. C., Jan. 22.—The movement of petroleum and products by water routes throughout the United States is traced in great detail in a report of the chief of engineers of the army. This report covers waterbound petroleum and products for the calendar year 1930, and includes traffic through the Panama Canal and traffic handled by the Inland Waterway Corp. on the upper and lower Mississippi River and on the Warrier system of Alabama.

CREOLE COMPANY BUILDS REFINERY AT CARAPITO

NEW YORK, Jan. 23.—Creole Petroleum Co., Venezuelan operating subsidiary of Standard Oil Co. (New Jersey), is building a topping plant at its marine terminal at Carapito, terminal of the company's pipe line from the Quirequire Field.

While reports in trade circles indicate that the Carapito plant is the initial unit of a refinery that will ultimately have a rated capacity in excess of 1,000,000 bbls. per year, officials of the Creole company state that the plant will be used only for topping to provide a supply of fuel oil for local operations, and that no provision has been made for adding further refining units.

The production of the Quirequire Field yields a large percentage of fuel oil. The field's output is piped to Carapito, and thence loaded on tankers for export shopment. Owing to the shallow depth at the bar of the river at tidewater, tankers can be loaded only to partial capacity, and the bulk of their cargo is transported down the river and over the bar in shallow draft tankers, for full loading of the tankers.

Creole was reported some months ago to be planning construction of a large modern refinery in the Caribbean area, presumably to refine the company's Venezuelan output in the event of the passage of an oil tariff law by the United States, but confirmation of the reported plans was lacking at the time.

OKLAHOMA FIGHTS TAX EVASION

The Oklahoma Petroleum Marketers Association will make concerted efforts to locate and turn over to state authorities retail station operators who are evading the payment of the Oklahoma gasoline tax. J. A. Atchison, manager of the association, will head a committee for this work and will establish a close contact with the state authorities.

EXPANDING STAR PLANT

The Star Refining Co., Fort Worth, Tex., is spending in the neighborhood of $40,000 in reconstruction and new work on its refinery, the work to be completed around March 15.

TIDAL SELLS INTEREST IN WICHITA FALLS PLANT

The Tidal-Western gasoline plants and refinery near Burkburnett in Wichita County, Wichita Falls district, Texas, owned jointly by the Tidal Refining Co. and Western Oil Corp., have been taken over by the latter company which purchased the Tidal's one-half interest. One of the gasoline plants is located at Burkburnett and one in Northwest Field. Consideration was announced as $80,000. The refinery has a capacity of 2,500 bbls. per day, and has been shut down for some time.

GROZNY CRACKING OPERATIONS

NEW YORK, Jan. 23.—The Grozny cracking plant fulfilled its program quota for 1931 by December 31, last, when it had refined a total of 913,800 metric tons of oil, according to reports to Amtorg. The Grozny plant during the past year succeeded in reducing the cost of gasoline which it produced by 14.6 per cent under the 1930 figures, and reduced the cost of commercial fuel oil by 11.6 per cent, the report stated.

FORM ANTI BOOTLEG CLUB

The first Anti Gasoline Bootlegging Club to be sponsored by a chapter of the American Petroleum Institute is in process of formation at Drumright, Okla. Secretary E. L. (Ernie) Bell, of the Drumright Chapter, in his bulletin to members announced that the rolls are open for charter members of the Anti Bootlegging Club, and that local officers have pledged themselves to co-operate in eliminating the gasoline racket in that area.

SELL SULLIVAN PLANT

The refinery, including machinery, tanks, equipment and real estate of the Sullivan Refineries, Inc., at Dayton will be offered for sale at auction by A. Hanny, receiver, at Artesia on January 30 under an order of the District Court. Proceeds from the sale are to be applied to the payment of the company's indebtedness. The plant has been idle for some time.

Manufacture of Natural Gasoline

Sale of Liquefied Gases 46 Per Cent Higher During 1931

Despite the adverse economic conditions during 1931 manufacturers of liquefied gas were able to increase their sales over 1930 by 46 per cent. These data were supplied by the U. S. Bureau of Mines as the result of returns on questionnaires sent to all companies offering for sale in tank cars, drums or cylinders, liquefied gases, including propane, butane and a small percentage of pentane.

The total volume of these fuels sold during 1931 approximated 26,300,000 gallons compared with 18,017,347 gallons in 1930. This is an increase for the year of 8,300,000 gallons, or the increase was nearly as much as the total volume sold during 1929. The total volume of these fuels sold since the industry became of importance is given below by years in tabular form:

Year—	Gallons
1931	26,300,000
1930	18,017,347
1929	9,930,964
1928	4,522,899
1927	1,091,005
1926	465,085
1925	403,674
1924	276,488
1923	276,863
1922	222,640

Butane continued to be the principal fuel of the group. The ratio of butane sales to propane approximated 2 to 1 in volume. The use of butane as a medium for distribution as a household fuel in smaller communities accounted for the increased sale of this product. Sales of butane to the industries did not increase as anticipated earlier in the year and may be accounted for by the lesser manufacturing of heat-treated steel in the automobile industries and the limited use of this product for the enriching of artificial gas.

In the distribution of butane as a fuel, air-butane mixing plants came into prominence during the year and were generally adopted except in those instances where it was found expedient to supply a mixture of butane and propane in a definite proportion so that with a release in pressure on the tank car or cylinder, there would be complete vaporization of the butane. While this latter method eliminates the cost of mixing the gas with air, the transportation cost is higher and there is a greater volume loss at the plant. Important additions to the number of distribution plants were made during the year in the States of Michigan, Wisconsin, California, Washington and Oregon. The Standard Oil Co. of California has adopted this means of supplying small communities with gas in advance of extending natural gas lines into the now sparsely settled areas. These liquid gas plants will serve these communities until a sufficient number of people are added to the town and the company will then replace the plant with a regular gas distributing system.

For the present at least, the Standard Oil Co. of California has suspended adding to the number of its western liquefied gas plants which are eventually expected to extend from Mexico to Canada.

The great bulk of the liquefied gases come from natural gasoline manufacturers who recognized the importance of developing a market for their by-products. These were increasing in volume as the result of stabilizing the principle product. However, in the past year, several large refiners witnessed the production of an excess of butane at their plants and have considered entering the liquefied gas field also. As reforming becomes of increasing importance there will be an increasing volume of light fractions produced.

NATURAL QUOTATIONS FOR 1931 ONE-THIRD OF 1926 AVERAGES

In 1931 natural gasoline sold for approximately one-third of its average price in 1926, a year which might be considered a normal one. To have predicted an average price for AA grade natural gasoline of 3 cents to extend over a period of a year would have been termed insanity just a few months ago and only a year ago the industry looked upon the 1930 average of 5.24 cents as abnormally low. It was low compared to the prices received in the previous years, but the average for 1931 makes 1930 look like a banner year. These facts are not news to the natural gasoline industry, however, for it had been preparing for most any set of conditions, and its ability to witness such a market change without actually altering its course greatly emphasizes the flexibility in the routine operation. Early in the development stages the raw gas contracts were based upon the market price received for the finished product. This helped to relieve the manufacture of a portion of the loss which must be absorbed when prices are reduced. With practically all major manufacturers purchasing gas on such a basis, the next step was to work out a uniform form of contract so that all manufacturers would be affected alike when economic changes came about. This was accomplished and all through the period other standardization programs were undertaken and the result was that manufacturing costs were reduced.

This had to do with the problem of manufacture, but as the output increased the marketing problem became a more difficult one. To try to solve it, the industry predicated its sales endeavors on the fact they had something to offer that had unusual merit. The statements were backed up by a three-year program of laboratory and practical research. Such terms as controlled volatility, vapor pressure limit, butane-free, etc., began to appear and were used to distinguish a "good" natural gasoline from a "poor" one. Improved quality began to be stressed to enable the manufacturer to sell more of his product to the refiner. These factors also tended to lessen production and some hope of maintaining a reasonable price level was placed in this program of improving quality. But despite these efforts, natural gasoline production increased as the result of finding rich new sources of gas and natural gasoline plants were built as fast as rigs were built to drill wells. Then the general drop in all gasoline prices occurred and natural gasoline did no more than hold its former price relationship with the price of refinery gasoline.

Natural gasoline has held to this price relationship, but in the meantime manufacturers have found it necessary to expand their markets. To sell to the consumer direct looked like a big undertaking when such a program was first mentioned, but it is the accepted theory now that the natural gasoline industry will further develop outlets in this manner if some other disposition is not found for its products. Low cost of manufacture, flexibility in operations, the sharing of the loss due to low market prices by the producers of the wet gas, and the ability of manufacturers to fractionate their product to yield a very satisfactory motor fuel gives encouragement to the future. Similarly, markets are being developed for the by-products resulting from superstabilizing the natural gasoline, and once the development of these new uses reaches beyond the "trial stage" real profits may be expected. This outlet will be continuous and the quality can become appreciable. Elsewhere on this page it is shown that 26,000,000 gallons of such by-products were sold in 1931 as liquefied gases including propane, butane and a little pentane. Despite the poor showing in the sale of almost all commodities, the bottled gas business showed an increase in sales compared to 1930 of 46 per cent.

In regard to natural gasoline prices in the immediate future and over a long period in the future, those closest to the industry say that very likely natural gasoline prices will follow those for refinery gasoline and these in turn will follow general economic conditions. They believe that natural gasoline will be produced as cheaply as refinery gasoline and if it is not sold through the refiners as a blend it will be superstabilized and marketed directly. The research program of the individual companies and a collective program are all progressing despite the present low level of prices and those in charge point to the trend toward designing automobile "plumbing" to use more volatile gasoline as offering a distinct advantage to the use of natural gasoline in the future.

The comparison of average prices on all grades of natural gasoline for 1931 and the average for nine previous years appears in tabular form below. A comparison between the average U. S. Motor grade of refinery gasoline in the Mid-Continent and at Bayonne with that of grade AA natural gasoline is also shown in tabular form over the same period.

There has been almost a constant relationship maintained between Mid-Continent U. S. Motor prices and natural gasoline prices year by year and not since 1925 has natural gasoline enjoyed a price higher than that of U. S. Motor gasoline. The Bayonne gasoline price is shown since that price determines the profit in shipping natural gasoline from the Mid-Continent to the large eastern market for blending with refinery gasoline and also more recently serves as a competitive price in supplying superstabilized natural gasoline from the Gulf Coast as a motor fuel to European markets.

An interesting factor in the trend of prices in the Bayonne tank car market is that prices in 1931 were not as low compared to the 1926 price as those for U. S. Motor gasoline in the Mid-Continent and also natural gasoline prices in the Mid-Continent.

COMPARISON OF AVERAGE QUOTED PRICES ON ALL GRADES OF NATURAL GASOLINE IN MID-CONTINENT

	1931	1930	1929	1928	1927	1926	1925	1924	1923
A	.0322	.0526	.0706	.0744	.0585	.0945	.1202	.0866	.0912
AA	.0300	.0524	.0683	.0734	.0575	....	....	....	...
B	.0291	.0494	.0637	.0691	.0544	.0887	.1158	.0818	.0875
BB	.0281	.0488	.0630	.0685	.0543	....	....	....	....
C	.0279	.0482	.0618	.0666	.0525	.086	.1120	.0767	.0823

COMPARISON OF GRADE AA MID-CONTINENT PRICES AND U. S. MOTOR

	1931	1930	1929	1928	1927	1926	1925	1924	1923
AA natural*	.0300	.0524	.0683	.0734	.0575	.0945	.1202	.0866	.0913
U. S. Motor, Mid-Continent	.0345	.0624	.0775	.0795	.0667	.1021	.1055	.0896	.0978
U. S. Motor, Bayonne	.0604	.0807	.0940	.1020	.0941	.134	.1465	.1316	.1388

*For 1926 and earlier, Grade A price taken as basis.

To Give New Data On Heat Expansion Of All Gasolines

By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Jan. 25.—Motor fuel heat expansion, of special interest to natural gasoline manufacturers as well as refiners, will in the near future be fully discussed in a publication by the U. S. Bureau of Standards as factors in such heat expansion have formerly been based upon measurements made prior to 1916 on the thermal expansion of straightrun gasolines, the only type of motor fuels in general use at that time.

Recently additional measurements have been made on present-day motor fuels, approximately 50 per cent of which are now produced by various cracking processes or by mixing gasoline with benzol.

The standard unit used most extensively in this country for determining quantities of gasoline and other petroleum products in commerce, is the gallon, defined as 231 cubic inches of liquid at 60° F. In large quantity shipments, tank cars for example, it is customary to observe the volume of gasoline at the existing temperature by reading the gauge in the dome of the tank car, and to reduce the observed volume to the equivalent volume at 60° F. by the use of certain volume correction factors such as those given in National Standard Petroleum Oil Tables, Bureau of Standards, Circular 154.

The recent additional measurements have been made on the coefficients of expansion of 9 straightrun gasolines, 16 cracked gasolines, 3 motor benzols and 5 benzol blends. These materials were submitted for use in this investigation by 20 different oil companies. The samples were derived from crudes from seven different states and the cracked gasolines were produced by six different cracking processes, including both liquid and vapor phase processes.

"It is generally recognized that volatility is more significant than gravity as an index of the suitability of a gasoline for a particular use," it was stated at the Bureau of Standards. "Most specifications, for example, require a distillation test, whereas a gravity determination is not required. It appears from the results obtained in this recent investigation that volatility also serves much better than gravity as an index of thermal expansion."

It has been found that a table of volume correction factors for aviation gasolines and motor gasolines, based upon volatility, represents the results obtained on all the motor fuels with an accuracy better than 0.07 per cent in the correction factors for the usual temperature range of 40 to 80° F. This is equivalent to an uncertainty of less than 1 per cent Fahrenheit in the determination of the average temperature of the motor fuel.

ESTABLISHES SAFETY RECORD

The southern division of the Standard Gasoline Co., which includes all the company's natural gasoline plants operating in the Los Angeles Basin, has just completed 569,632 man hours without a lost time accident. The accident which broke the record came from a slight burn from a welding arc causing one day lost time. This record, in effect, means that 398 full time employes worked 184 days without an injury. This same division established a record of 120 working days with 535 men without a lost time accident last year.

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● This is a big statement, but we stand ready not only to prove it but we guarantee satisfactory results.

● When the opportunity is not available to specify complete control equipment, Foxboro will still guarantee the design and construction of their instruments.

● In the first place, their design is correct. A broad experience with refinery problems has enabled our design engineers to design correctly for refinery practice.

● In the second place, they are built correctly; — simple, rugged, with a maximum factor of safety, and minimum friction.

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REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINES

	Jan. 26		Jan. 19	
OKLAHOMA (Group 3)—				
*U. S. Motor	.03	.03¼	.03	.03¼
60-62 400	.03¼	.03⅜	.03¼	.03⅜
64-66 390	.03½	.03¾	.03½	.03¾
64-66 375	.03¾	.04	.03¾	.04
68-70 350	.04	.04¼	.04	.04¼
NORTH TEXAS—				
*U. S. Motor	.03	.03¼	.02⅞	.03
60-62 400	.03¼	.03⅜	.03¼	.03¼
64-66 390	.03½	.03⅝	.03⅜	.03⅝
64-66 375	.03¾	.04	.03¾	.04
64-66 360	.04	.04⅛	.04	.04⅛
‡NORTH LOUISIANA—				
*U. S. Motor	.03½	.03¾	.03½	
60-62 400	.03¾		.03⅞	.03¾
‡ARKANSAS—				
*U. S. Motor	.03½	.03⅝	.03½	
CHICAGO Based on Okla. (Group 3)—				
*U. S. Motor	.03	.03¼	.02⅞	.03⅛
60-62 400	.03¼	.03⅜	.03¼	.03⅜
64-66 375	.03⅞	.04	.03⅝	.03⅞
Aviation fighting grade	.04¾	.05¼	.04⅞	.05⅜
68-70 360	.04	.04¼	.03⅞	.04⅛

Octane Ratings—Above quotations cover price ranges on gasolines in which no octane rating is given. In the case of the U. S. Motor and 60-62 400 endpoint grades where an octane rating of 57-65, inclusive, is guaranteed, prices are one-fourth cent per gallon higher than quotations shown in above tables; where an octane rating of 65 or higher is guaranteed, the prices are one-half cent higher. In the case of the remaining grades, gasolines of 65 octane rating or higher are quoted one-fourth cent higher than the quotations shown in above tables. Unless otherwise provided by agreement of buyers and sellers, the Series 30 testing equipment of the Ethyl Gasoline Corp. is recognized as standard in determining octane ratings.

*Present distillation specifications on U. S. Motor gasoline are: 10 per cent recovery, 167° F. maximum; 50 per cent, 284° F. maximum; 90 per cent, 392° F. maximum; residue not exceeding 2 per cent; maximum vapor pressure, 12 pounds. Additional specification on U. S. Motor gasoline available from bulletins of Bureau of Mines, Washington, D. C.

‡For Arkansas, Louisiana and Mississippi delivery.

PENNSYLVANIA (inland refineries)—				
U. S. Motor	.04¼	.04½	.04¼	.04½
60-62 400	.04¾		.04½	.04¾
64-66 375	.04¾	.05	.04¾	.05
68-70 350	.05½		.05½	

Octane Ratings—In the case of U. S. Motor and 60-62 400 endpoint grades, same price differentials based on octane ratings as shown in above tables for Oklahoma and other Mid-Continent areas.

CALIFORNIA (domestic movement only)—				
54-58 U. S. Motor	.05½	.06	.05¾	.06½
58-60 400	.06	.06¾	.06½	.07
NEW YORK (Bayonne, N. J.)—				
U. S. Motor, below 65 octane number	.05¾		.05¾	
U. S. Motor, min. 65 octane	.06½		.06	

NAPHTHAS

	Jan. 26		Jan. 19	
OKLAHOMA (Group 3)—				
50-52 450 (blending)	.02¾		.02¾	
PENNSYLVANIA—				
50-54 430-450 (blending)	.04¼		.04¼	
ARKANSAS—				
48-50 450 (blending)	.03	.03¼	.03	
CHICAGO Based on Okla. (Group 3)—				
50-52 450 (blending)	.02⅝	.02⅞	.02⅝	.02⅞
Cleaners' naphtha, 56-58 gr. 200 i.b.p.-320 e.p.	.05⅝	.05⅞	.05⅝	.05⅞
Lacquer diluent, 180 i.b.p.-250 e.p.	.08⅝	.08⅞	.08⅝	.08⅞
Lacquer diluent, 140 i.b.p.-200 e.p.	.08⅞	.09⅛	.08⅞	.09⅛
Rubber solvent, 68-70 gr., 100 i.b.p.-300 e.p.	.05⅝	.06⅛	.05⅝	.06⅛
Stoddard solvent, 300 i.b.p.-410 e.p., over 100° flash	.04⅞	.05⅛	.04⅞	.05⅛
Pet. thinner, 290, 300 i.b.p.-415 e.p., over 83° flash	.04⅜	.04⅝	.04⅜	.04⅝
V.M.&P. naphtha, 56-58 gr., 190-200 i.b.p.-330 e.p.	.05¼	.05½	.05¼	.05½
Petroleum spirits	.04	.04½	.04	.04½

NATURAL GASOLINES

OKLAHOMA (Group 3)—	Jan. 26		Jan. 19	
Grade 26-70	.02¼		.02¼	
NORTH TEXAS—				
Grade 26-70	.02⅛	.02¼	.02⅛	.02¼
NORTH LOUISIANA—				
Grade 26-70	.02⅜		.02⅜	
CALIFORNIA—				
75-78 375	.05¼	.06¼	.05¼	.06¼

Note—Grade 26-70 is one of the 24 grades adopted by the Natural Gasoline Association of America which became finally effective January 1, 1932. For this grade the vapor pressure is 22-26 pounds (Reid method) and 70 to 85 per cent evaporated at 140° F. See page 74 of January 7 issue for explanation of new grading system.

KEROSENES

(All kerosenes water white.)

	Jan. 26		Jan. 19	
OKLAHOMA (Group 3)—				
41-43	.02⅝	.02¾	.02⅝	.02¾
42-44	.02¾	.02⅞	.02¾	.02⅞
NORTH TEXAS—				
40-41	.02½		.02½	
41-43	.02⅝		.02⅝	
‡NORTH LOUISIANA—				
41-43	.03	.03¼	.03	.03¼
42-44	.03¼	.03⅜	.03¼	.03⅜
‡ARKANSAS—				
41-43	.03	.03¼	.03	.03¼
PENNSYLVANIA—				
45	.04⅜	.04½	.04⅜	.04½
46	.04½	.04⅝	.04½	.04⅝
47	.04⅝	.04¾	.04⅝	.04¾
CHICAGO (Based on Group 3)—				
41-43	.02⅝	.02¾	.02⅝	.02¾
42-44	.02¾	.03	.02¾	.03
***CALIFORNIA—**				
38-40 high burning test	.04	.05	.04	.05
NEW YORK (Bayonne, N. J.)—				
41-43	.06		.06	

For Pacific Coast consumption.

‡For Arkansas, Louisiana and Mississippi delivery.

TRACTOR FUELS*

	Jan. 26		Jan. 19	
OKLAHOMA (Group 3)—				
39-41 prime white	.02¼	.02⅜	.02¼	.02⅜
38-40 light straw	.02	.02⅛	.02	.02⅛
NORTH TEXAS—				
38-40 light straw	.02⅛	.02¼	.02⅛	.02¼
CHICAGO—				
38-40 light straw	.02⅛	.02¼	.02⅛	.02¼
PENNSYLVANIA—				
41-43 prime white	.04¼		.04¼	

*There are no standard specifications for tractor fuels. Grades commonly sold have flash under 175° F. (open cup) and under 575° F. endpoint and less than .2 per cent sulphur. Tractor fuels are available from all Mid-Continent refining groups at prices in line with the Oklahoma market taking into consideration differentials in freight rates.

FURNACE OILS*

	Jan. 26		Jan. 19	
OKLAHOMA (Group 3)—				
32-36 straw	.01¾	.02	.01¾	.02
36-38 straw	.01⅞	.02⅛	.01⅞	.02⅛
38-40 straw	.02	.02⅛	.02	.02⅛
39-41 prime white	.02⅛	.02¼	.02⅛	.02¼
NORTH TEXAS—				
38-40 straw	.02	.02⅛	.02	.02⅛
‡NORTH LOUISIANA—				
36-40	.02½		.02½	
‡ARKANSAS—				
32-36	.02⅜	.02½	.02⅜	.02½
CHICAGO—				
32-36 straw	.01⅞	.02⅛	.01⅞	.02⅛
38-40 straw	.02⅛	.02¼	.02⅛	.02¼
PENNSYLVANIA—				
40-41 prime white	.03½		.03½	
NEW YORK (Bayonne, N. J.)—				
32-36	.03½		.03½	
36-40	.03¾		.03¾	

*Above prices are for furnace oils of zero cold test, under 190° F. flash and good odor.

‡For Arkansas, Louisiana and Mississippi delivery.

GAS OIL, DIESEL OIL AND FUEL OIL

Gas oil (G.O.) quoted per gallon basis; Diesel oil and fuel oil per barrel.

	Jan. 26		Jan. 19	
OKLAHOMA (Group 3)—				
32-36 (G.O.) cracking stock	.01¼		.01¼	
U.-I. (G.O.)	.01¼	.01⅜	.01¼	.01⅜
32-36, zero to 15	.01⅜	.01½	.01⅜	.01½
28-30, zero to 10	.45	.50	.45	.50
26-30, zero to 10	.40	.50	.40	.50
24-26	.35	.40	.35	.40
20-22	.27½	.35	.27½	.35
16-20	.25	.30	.25	.30
Below 16	.22½	.27½	.22½	.27½
NORTH TEXAS—				
32-36 (G.O.) industrial	.01¼		.01¼	
22-26	.40	.45	.40	.45
Below 20	.35	.40	.35	.40
‡NORTH LOUISIANA—				
30-32 (G.O.) zero	.02	.02¼	.02⅛	.02¼
18-22	.35	.50	.35	.50
‡ARKANSAS—				
28-32 (G.O.) zero	.55	.60	.55	.60
16-20	.40	.50	.40	.50
CHICAGO—				
32-36 (G.O.) industrial	.01⅜	.01½	.01⅜	.01½
28-30 (zero)	.50	.60	.50	.60
22-26	.32½	.37½	.32½	.37½
18-22	.25	.30	.25	.30
Below 18	.20	.25	.20	.25

Note—Fuel oils of more than 40 cold test generally 5 to 10 cents per barrel less in all areas than shown in above tables.

‡For Louisiana, Arkansas and Mississippi delivery.

CALIFORNIA—				
30-34 (G.O.) per bbl.	.85	1.00	.95	1.10
27 plus Diesel	.80	.95	.85	1.00
15-19 bunker (at tidewater)	.60	.80	.60	.80
15-19 bunker (cargo lots)	.55	.75	.55	.75
15-19 (tank cars)	.40	.55	.40	.55
GULF COAST—				
28-30 (G.O.)	.02¾	.03	.02½	.02⅝
Bunker C (cargo lots)	.40	.50	.40	.50
NEW YORK (Bayonne, N. J.)—				
28 plus (G.O.)	.03½	.04	.03½	.04
*28-30 Diesel	1.30		1.30	
†Bunker C	.60		.60	

*Lighterage 6½ cents per barrel.

†Lighterage 5 cents per barrel.

NEUTRAL OILS

(Viscosity at 100° F., and Color)

	Jan. 26		Jan. 19	
OKLAHOMA (Group 3)—				
Zero to 10 Cold Test:				
150-3	.06¼	.06½	.06¼	.06½
180-3	.07½	.07¾	.07¾	.08
180-4	.07	.07¼	.07¼	.07½
200-3	.08½		.02½	.09
200-4	.08	.08¼	.08¼	.08½
240-3	.09¾	.10	.10¼	.10½
240-4	.09¼	.09½	.09½	.09¾
280-3	.11¼	.11½	.11¾	.12
280-4	.10¼	.10½	.10¾	.11
300-3.5	.11¾	.12	.12¼	.12½
350-3.5	.12½	.12½	.12¾	.13
400-4	.12¾	.13	.13¼	.13½
500-4.5	.13¼	.13½	.13¾	.14
100-2 paraffin oil	.04¼	.04½	.04¼	.04½
15-30 Cold Test:				
200-3	.07¾	.08	.08¼	.08½
200-4	.07½	.07¾	.07¾	.08
240-3	.09¼	.09½	.09¾	.10
240-4	.08¾	.09	.09	.09¼
280-3	.10¾	.11	.11¼	.11½
280-4	.09¾	.10	.10¼	.10½
PENNSYLVANIA—				
Viscosity at 70° F., and Color:				
150-3	.13	.13½	.13½	.14
180-3	.16	.17	.17	.18
200-3	.18	.18¼	.18	.18½
220-3	.20½	.21	.20½	.21
36 Miners Neutral	.05½		.05½	
34 Neutral	.05½		.05½	
34 Sundebloom Neutral	.05		.05	
GULF COAST—				
Pale Oils:				
100-2-2½	.05	.05½	.05	.05½
200-3	.07	.07½	.07	.07½
300-3	.07¾	.08	.07¾	.08
500-3½	.09	.09½	.09	.09½
750-3½	.10	.10¼	.10	.10¼
1,200-3½	.12	.12¼	.12	.12¼
2,000-4	.14	.14½	.14	.14½
Red Oils:				
200-5-6	.06	.06¼	.06	.06¼
300-5-6	.06¾	.07	.06¾	.07
500-5-6	.08	.08¼	.08	.08¼
1,200-5-6	.11	.11¼	.11	.11¼
2,000-6 plus	.13	.13¼	.13	.13¼
CALIFORNIA—				
130-2½-3	.08¼	.08¾	.08¼	.08¾
200-2½-3	.09¼	.10¼	.09¼	.10¼
300-3-3½	.10¼	.11¼	.10¼	.11¼
350-3½-4	.11¼	.12	.11¼	.12
450-3½-4	.12	.12¾	.12	.12¾
550-3½-4	.12¾	.13¾	.12¾	.13¾
200-4½-5	.09¼	.10¼	.09¼	.10¼
300-5-6	.10½	.11	.10½	.11
400-5-6	.11½	.12½	.11½	.12½
500-5-6	.12¾	.13½	.12¾	.13½
600-5-6½	.13½	.14¼	.13½	.14¼
700-6½ plus	.14½	.15¼	.14½	.15¼
NEW YORK (Bayonne, N. J.)—				
Paraffin Oil:				
25 pale	.10¼		.10¼	
28 pale	.07¼		.07¼	
280 red	.12½		.12½	
250 red	.11½		.11½	
225 red	.10		.10	
200 red	.09¼		.09¼	

BRIGHT STOCKS AND STEAM REFINED STOCKS

	Jan. 26		Jan. 19	
OKLAHOMA (Group 3)—				
600 light green S.R.	.04	.06	.04	.06
600 dark green S.R.	.03½	.05	.03½	.05
Bright Stock:				
190-200 D	.18½		.19	.20
150-160 D, 0-10	.16½		.17½	.18
150-160 D, 10-25	.16		.17	.17½
150-160 D, 25-40	.15½		.16½	.17
150-160 E	.15	.15½	.16½	
PENNSYLVANIA—				
600 S.R.	.11	.11½	.11	.11½
650 S.R.	.13¾	.14	.13¾	.14
600 Pennsylvania flash	.15	.16	.15	.16
600 E filtered	.14	.15	.14	.15
600 D filtered	.17½	.18	.17½	.18
Pennsylvania Grade Bright Stock:				
10-15 pour test	.19	.20	.19	.20

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

25-30 pour test	.19		.19	
35 and above	.18½	.19	.18½	.19

WAX AND PETROLATUM

(Prices per pound.)

	Jan. 26		Jan. 19	
OKLAHOMA (Group 3)—				
124-126 white crude scale	.01⅝	.01¾	.01⅝	.01¾
PENNSYLVANIA—				
At New York:				
122-124	.02⅛		.02⅛	
124-126	.02⅛		.02⅛	
NEW YORK (Bayonne, N. J.)—				
Refined Wax:				
120-122	.02⅝		.02¾	
125-127	.02⅞		.02⅞	
130-132	.03⅛		.03⅛	
133-135	.03¾		.03⅞	.04
135-137	.04⅛		.04¼	

Petrolatum in barrels in carload lots:		
Dark green	.01¾	.01¾
Amber	.02¼	.02¼
Extra amber	.02¾	.02¾
Cream	.04⅜	.04½
Lily white	.05¾	.05½
Snow white	.06⅞	.06⅞

EXPORT PRICES

GASOLINE

	Jan. 26		Jan. 19	
GULF COAST—				
U. S. Motor	.04½		.04½	
60-62 400 endpoint	.04⅝		.04⅝	
61-63 390 endpoint	.04⅝		.04⅝	
64-66 375 endpoint	.04¾		.05	
LOS ANGELES, CALIF.—				
U. S. Motor, 53-55 437 e.p.	.04	.04½	.04	.04½
U. S. Motor, 65 octane num.	.05		.05	
U. S. Motor, 67 octane num.	.05¼		.05¼	
U. S. Motor, 69 octane num.	.05½		.05½	
58-62 400 endpoint gasoline	.04½	.05	.04½	.05

KEROSENE

GULF COAST—				
41-43 prime white	.04¼		.04¼	
41 water white	.04½		.04½	
LOS ANGELES, CALIF.—				
41-43 water white	.04	.04¾	.04	.04¾

LUBRICANTS

NEW YORK (Bayonne, N. J.)—				
600, steam refined cylinder stocks, in bbls.	.19	.20	.19	.20
650, steam refined	.22	.23	.22	.23
600, Pennsylvania flash	.24	.25	.24	.25
630, Pennsylvania flash	.27	.28	.27	.28
600, Warren E	.22½	.23	.22½	.23
600, Oil City E	.21½	.22	.21½	.22
Light 140-150 Bright Stocks	.27	.28	.27	.28
Dark 140-150 Bright Stocks	.26	.27	.26	.27

CALIFORNIA CRUDE OIL PRICES

STANDARD OIL CO. OF CALIFORNIA

For its current purchases of crude oil at the well (unless otherwise specified) the allowable crude oil produced in accordance with allocations made by the California Statewide Curtailment Committee. All gravities above those quoted take highest price offered in that field. Effective June 19, 1931 at 7 a.m.

Gravity	Signal Hill	Seal Beach, Alamitos Heights	Huntington Beach	Inglewood	Olinda-Brea, Canon	Torrance	Richfield	Coyote Hills	Santa Fe Springs	Midway-Sunset, Elk Hills, Buena Vista Hills	Lost Hills
14-14.9	$.65	$.65	$.65	$.65	$.65	$.65	$.65	$.65	...	$.55	$.55
15-15.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
16-16.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
17-17.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
18-18.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
19-19.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
20-20.9	.65	.65	.65	.66	.66	.65	.65	.65	...	.55	.55
21-21.9	.65	.65	.65	.68	.67	.65	.66	.65	...	.55	.57
22-22.9	.65	.65	.66	.70	.68	.66	.68	.65	...	.56	.59
23-23.9	.67	.67	.68	.72	.70	.67	.70	.66	...	.58	.60
24-24.9	.69	.69	.70	.74	.72	.68	.72	.67	$.65	.61	.62
25-25.9	.71	.71	.72	.76	.74	.70	.74	.69	.65	.64	.64
26-26.9	.73	.73	.74	...	.76	...	...	.71	.65	.66	.65
27-27.9	.75	.75	.76	...	.78	...	...	.73	.68	.68	.67
28-28.9	.77	...	...	...	.80	...	...	.75	.71	.71	.69
29-29.9	.79	...	...	...	...	...	...	.77	.73	.74	.71
30-30.9	.81	...	...	...	...	...	...	.79	.75	.76	.72
31-31.9	...	...	...	...	...	...	...	...	.78	...	...
32-32.9	...	...	...	...	...	...	...	...	.80	...	...
33-33.9	...	...	...	...	...	...	...	...	.83	...	...
34-34.9	...	...	...	...	...	...	...	...	.85	...	...
35-35.9	...	...	...	...	...	...	...	...	.87	...	...

Standard Oil Co. of California prices in other fields:

Wheeler Ridge—55 cents per barrel for all grades (14° to 25.9°).

Coalinga—55 cents for all grades from 14° to 24-24.9°; 57 cents for 25 gravity.

Newhall, McKittrick and Kern River—55 cents for all grades (14° to 19.9°).

Montebello—65 cents for all grades (14° to 25.9°).

Whittier and LaHabra—65 cents for all grades (14° to 22.9°).

Elwood Terrace, f.o.b. ship—33° to 33.9°, 79 cents; 34° to 34.9°, 81 cents; 35° to 35.9°, 84 cents; 36° and above, 87 cents.

Playa Del Rey—Prices subject to field gathering charge of 5 cents per barrel—19° to 19.9°, 65 cents; 20° to 20.9°, 65 cents; 21° to 21.9°, 66 cents; 22° to 22.9°, 67 cents; 23° to 23.9°, 68 cents; 24° to 24.9°, 67 cents; 25° and above, 68 cents.

(Continued on Page 163)

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

East Texas (Nov. 2, 1931)†.....$ .33
Corsicana heavy (Nov. 2, 1931)*..... .49
Other fields.....See gravity table

†Posted by Panola Pipe Line Co., Magnolia Petroleum Co., Tidal Refining Co., Sinclair Refining Co., Gulf Pipe Line Co., Atlas Pipe Line Co. *Magnolia Petroleum Co.

EASTERN STATES

Joseph Seep Purchasing Agency
(Effective December 16, 1931)

Pennsylvania Grade Oil in National Transit Lines (Bradford Field) $1.85
Pennsylvania Grade Oil in Southwest Pennsylvania Lines 1.55
Penna Grade Oil in Eureka Pipe Line Lines (West Virginia) 1.45
Penna Grade Oil in Buckeye Pipe Line Lines 1.25
Corning Grade Oil in Buckeye Pipe Line Co.'s line (Nov. 2, 1931) ..... .85
Bagland Grade Oil in Cumberland Pipe Lines (Kentucky) (Jan. 10, 1931).... .60
Wayne district Oil in Cumberland Pipe Lines (April 23, 1931) 1.17

Tide Water Pipe Co.
(Effective December 16, 1931)

Bradford, Pa. $1.85
Allegany, N. Y. 1.85

Pure Oil Co.
(Effective December 16, 1931)

Cabin Creek, W. Va. $1.45
Bradford Hollow, W. Va. 1.45
Kelly's Creek, W. Va. 1.45

Pennsoil Co.
(Effective December 16, 1931)

Pennsylvania Grade Oil in National Transit Lines:
Group A $1.80
Includes Cochran, Franklin, Hamilton and Doolittle districts.
Group B $1.79
Includes Titusville district.
Group C $1.78
Includes Turkey and Tidiout districts.
Group D $1.77
Includes Bear Creek and Porkey districts.
Group E $1.75
Includes Eldenau, Bull Creek, Rough Run, Carbon, Dipner, Bredin, McJunkin, Jameson, Kennerdell, Emlenton, Tiona, Lacy and Kinsua districts.
Price depends on length of pipe line haul to plant at Oil City.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties....See gravity table

ROCKY MOUNTAIN STATES

Ohio Oil Co.-Midwest Refining Co.

Ilea, light (Aug. 24, 1931).....$ .71
Ilea, heavy (Aug. 24, 1931)..... .53
Fort Collins (Nov. 3, 1931)..... .71
Florence (Nov. 2, 1931)..... .65
Wellington (Nov. 3, 1931)..... .61
Dutton Creek (Nov. 3, 1931)..... .75
Rock Creek, Wyo. (Nov. 3, 1931)..... .55
Frannie, light (Nov. 3, 1931)..... .51
Frannie, heavy (Nov. 3, 1931)..... .51
Salt Creek.....Mid-Continent gravity table
Big Muddy (Nov. 3, 1931)..... .51
Grass Creek (Nov. 3, 1931)..... 1.05
Elk Basin (Nov. 3, 1931)..... 1.01
Lance Creek (Aug. 24, 1931)..... 1.05
Poison Spider (Mar. 5, 1931)..... .70
Notches (Mar. 14, 1927)..... .65
Hudson (June 3, 1931)..... .55
Lander (Mar. 5, 1931)..... .40
Rex Lake (Feb. 22, 1930)..... 1.10
Osage (Apr. 15, 1931)..... .95
Lost Soldier (Nov. 3, 1931)..... .69
Hamilton Dome (Nov. 3, 1931)..... .45
Greybull (Nov. 3, 1931)..... 1.05
Cat Creek (Nov. 3, 1931)..... 1.05
Pondera (Nov. 3, 1931)..... .90
Sunburst, Mont. (Nov. 3, 1931)..... 1.00
Hogback, N. Mex. (Aug. 24, 1931)..... .80
Lea County, N. Mex. (Nov. 3, 1931).. .50
Border, Mont. 1.55
Red Coulee, Alberta 1.55
Dry Creek, Mont. (Aug. 24, 1931)..... 1.00
Maljamar (Aug. 22, 1931)..... 1.00
Artesia-Jackson (Nov. 3, 1931)..... .50

Note—Salt Creek, Cat Creek, Dry Creek Dallas-Derby, Hudson, Greybull and Hogback posted by Midwest Refining Co. and remainder by Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin Lost Soldier posted by Producers & Refiners Corp. Artesia, Jackson and Maljamar posted by Continental Oil Co. Border and Red Coulee posted by Imperial Refining Co. Lea County posted by Humble Oil & Refining Co. Fort Collins, Wellington, Orchard, Florence, Rattlesnake and Table Mesa by Continental Oil Co. Osage posted by Arro Oil & Refining Co.

WEST TEXAS

Matan and Westbrook..Same as North Texas
Crane, Upton, Crockett, Howard, Glasscock, Ector, Winkler and Pecos Counties* .....$ .50
Lea County, N. Mex.‡ ..... .50
Foborg, Pecos County, Aug. 25, 1931†. .25
*The Texas Company, November 2, 1931; Magnolia Petroleum Co., Humble Oil & Refining Co., Gulf Pipe Line Co., same day. †Shell Petroleum Corp. ‡Humble Oil & Refining Co., The Texas Company, November 3, 1931.

GULF COAST

Grade A and Grade B classifications discontinued by leading buyers.....
.....See gravity table
Jennings, La. (Nov. 2, 1931)*.....$ .65
Lockport, La. (Aug. 27, 1931)†.....
.....See Gulf Coast gravity table
Refugio light.....See gravity table
Refugio heavy (Nov. 2, 1931)‡..... .75
Markham (Nov. 2, 1931)§..... .67

(Continued on Page 158)

CRUDE OIL GRAVITY TABLE

	Kansas and Oklahoma 1	North and Central Texas 2	East Central Texas 3	Gray County, Texas 4	Carson and Hutchinson Counties, Texas 5	Salt Creek, Wyo. 6	North Louisiana and Arkansas 7	Gulf Coast, (Tex. and La.) 8	Cameron Meadows, La. 9
Below 25 degrees	...	...	...	...	...	...	...	$.70	$.60
25-25.9 degrees	...	...	...	...	...	...	...	.71	.60
26-26.9 degrees	...	...	...	...	...	...	...	.72	.61
27-27.9 degrees	...	...	...	...	...	...	...	.73	.62
28-28.9 degrees	...	...	...	...	...	...	...	.74	.63
Below 29 degrees	$.61	$.61	$.61	...	...	$.61	$.61	...	...
29-29.9 degrees	.63	.63	.63	...	...	.63	.63	.75	.64
30-30.9 degrees	.65	.65	.65	...	...	.65	.65	.76	.65
31-31.9 degrees	.67	.67	.67	...	...	.67	.67	.77	.66
32-32.9 degrees	.69	.69	.69	...	...	.69	.69	.78	.67
33-33.9 degrees	.71	.71	.71	...	...	.71	.71	.79	.68
34-34.9 degrees	.73	.73	.73	$.61	$.56	.73	.73	.80	.69
35-35.9 degrees	.75	.75	.75	.63	.58	.75	.75	.81	.70
36-36.9 degrees	.77	.77	.77	.65	.60	.77	.77	.82	.71
37-37.9 degrees	.79	.79	.79	.67	.62	.79	.79	.83	.73
38-38.9 degrees	.81	.81	.81	.69	.64	.79	.81	.84	.73
39-39.9 degrees	.83	.83	.83	.71	.66	.79	.83	.85	.74
40 degrees and over	.85	.85	.85	.73	.68	.79	.85	.86	.75

Column 1—Led by Continental Oil Co. effective November 2, 1931, and adopted on same day by other companies excepting Magnolia Petroleum Co. and White Eagle Oil Corp. and excepting that Carter Oil Co., Gypsy Oil Co., and Pure Oil Co. started their schedule at below 25 degrees, 53 cents; 25 degrees, 55 cents; with 2 cents added for each degree upward to 40 degrees and above at 85 cents. Magnolia Petroleum Co. adopted the price schedule in Oklahoma on January 8, 1932, and the White Eagle Oil Corp. in Kansas on January 1, 1932, on oil from 29 degrees upward, but posted 52 cents for oil below 28 gravity and 54 cents for 28 gravity.

Column 2—Led by Continental Oil Co. effective November 2, 1931, and followed by other purchasers on same day excepting Magnolia Petroleum Co. which met the prices on January 8, 1932, from 29 degrees upward, posting 52 cents for oil below 28 degrees and 54 cents for 28 gravity oil.

Column 3—Humble Oil & Refining Co. on November 2, and by other buyers excepting Magnolia Petroleum Co., which met the prices from 29 degrees upward on January 8, 1932, but posted 52 cents for oil below 28 degrees and 54 cents for 28 gravity oil.

Column 4—Led by The Texas Company, November 2, followed by Humble Oil & Refining Co., Gulf Pipe Line Co. and H. F. Wilcox Oil & Gas Co. same day. Magnolia Petroleum Co., January 8, 1932.

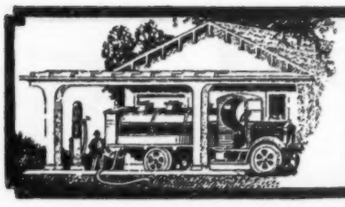
Column 5—Led by The Texas Company, November 2, followed on same day by Humble Oil & Refining Co. and Gulf Pipe Line Co. Magnolia Petroleum Co., January 8, 1932.

Column 6—Midwest Refining Co., November 2.

Column 7—Standard Oil Co. of Louisiana, November 4, 1931; The Texas Company, Gulf Refining Co. and Louisiana Oil Refining Co. same day. Magnolia Petroleum Co., January 8, 1932.

Column 8—Led by The Texas Company, November 2, followed on same day by Humble Oil & Refining Co., Vacuum Oil Co., Gulf Pipe Line Co. and Sun Oil Co., but two last named companies' schedules stop at 35 degrees and above at 81 cents, and the Sinclair Refining Co., but latter company's schedule stops at 31 degrees and above at 71 cents. Magnolia Petroleum Co. applied this schedule to Lockport and Iowa, La.

Column 9—Magnolia Petroleum Co., January 8, 1932.



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns Jan. 26.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago	15.0	15.0	3.0	9.0
Decatur, Ill.	15.5	15.5	3.0	9.1
E. St. Louis	14.8	12.8	3.0	8.3
Joliet	15.5	15.5	3.0	9.1
Peoria	15.5	15.5	3.0	9.1
Quincy	15.3	15.3	3.0	8.9
Davenport, Ia.	15.6	13.0	3.0	9.4
Des Moines	13.0	13.0	3.0	8.1
Keokuk	15.6	15.6	3.0	6.4
Sioux City	15.2	15.2	3.0	9.0
Duluth, Minn.	16.6	16.6	3.0	10.0
Mankato	16.2	16.2	3.0	8.1
Minneapolis	14.5	14.5	3.0	10.0
LaCrosse, Wis.	17.3	17.3	4.0	10.1
Milwaukee	16.2	16.2	4.0	9.0
Madison	16.4	16.4	4.0	9.2
Detroit, Mich.	14.5	14.5	3.0	9.1
Grand Rapids	15.3	15.3	3.0	10.7
Saginaw	13.2	13.2	3.0	10.9
Evansville, Ind.	16.2	16.2	4.0	10.0
Indianapolis	16.4	16.4	4.0	10.2
South Bend	16.5	16.5	4.0	8.1
Fargo, N. D.	18.0	18.0	3.0	12.0
Huron, S. D.	17.4	17.4	4.0	10.8
Sioux Falls	16.9	16.9	4.0	10.5
K. C., Mo.	15.0	15.0	3.0	7.9
Springfield*	15.0	15.0	3.0	8.6
St. Louis*	14.0	14.0	3.5	8.4
St. Joseph	10.5	10.5	3.0	7.6
Wichita, Kans.	13.9	13.9	3.0	6.1
Bartlesville, Ok.	13.1	15.1	4.0	7.1

*State tax 2 cents, remainder city tax.

A third grade of gasoline, "Stanolind Blue," is sold at all major points at a price 1¼ cents or more below the price on the regular grade.

Effective November 4—New dump discount applicable on all grades of gasoline sold from tank wagon. Any tank wagon customer buying 25 gallons or more at one time will be given 1-cent discount per gallon off tank wagon price at time of delivery. Customers not under contract receive no other discount.

Effective April 15—Discounts on Q.D.A. on 1,000 gallons or more per month throughout territory; Red Crown Ethyl Gasoline, 3 cents off tank wagon price; Red Crown gasoline, 2½ cents off tank wagon price; Stanolind Blue gasoline, 1 cent off tank wagon price. On deliveries of 75,000 gallons or more each classification allowed 1 cent additional discount.

Discounts on resellers authorized agent's agreement: Same amounts as above except made off service station price instead of tank wagon price.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	15.0	16.0	4.0	8.0
Fort Worth	15.0	16.0	4.0	7.0
Houston	14.0	16.0	4.0	8.0
San Antonio	14.0	16.0	4.0	7.0
El Paso	16.0	18.0	4.0	10.0
Texarkana	14.0	16.0	4.0	8.0
Muskogee, Ok.	13.0	14.0	4.0	6.0
Okla. City	15.0	17.0	4.0	7.0
Tulsa	15.0	17.0	4.0	8.0
Ft. Smith, Ark.	*17.5	18.0	5.0	*11.0
Little Rock	*18.5	18.0	6.0	*11.0

One-cent rebate made from posted station prices to cash purchasers in Louisiana, Arkansas and Tennessee.

*Less 2 cents to dealers.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	13.0	15.0	4.0	12.5
Pueblo	12.0	15.0	4.0	12.0
Grand Jctn.	18.0	21.0	4.0	14.5
Casper, Wyo.	15.0	18.0	4.0	10.0
Cheyenne	†14.0	14.0	4.0	11.5
Butte, Mont.	17.0	20.0	5.0	16.0
Billings	20.0	23.0	5.0	14.5
Great Falls	21.0	23.0	5.0	16.0
Helena	20.0	23.0	5.0	16.0
Salt Lake, Utah	17.5	20.5	4.0	16.0
Albu'que, N. M.	18.0	21.0	6.0	14.0
Boise, Idaho	21.0	24.0	5.0	18.0
Twin Falls*	20.5	20.0	5.0	18.0

*3½-cent discount off tank wagon to dealers.

†3-cent discount off tank wagon to dealers.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Ohio points	15.5	16.0	4.0	*13.0

Dealers and commercial accounts 2 cents under tank wagon.

*Service station price 13 cents.

PENNSYLVANIA-DELAWARE AND PART OF NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	15.0	16.0	3.0	11.0
Philadelphia	14.0	15.0	3.0	11.0
Scranton	15.0	16.0	3.0	11.0
Allentown	15.0	16.0	3.0	11.0
Altoona	15.0	16.0	3.0	11.0
Erie	15.0	16.0	3.0	11.0
Dover, Del.	15.0	16.0	3.0	11.0
Wilmington	15.0	16.0	3.0	11.0
Springf'd, Mass.	15.5	16.5	3.0	8.5
Worcester	15.3	16.3	3.0	8.5
Boston	14.5	15.5	3.0	9.5
Providence, R.I.	13.5	14.5	2.0	8.5
Hartford, Conn.	14.5	15.5	2.0	10.0
New Haven	14.6	15.6	2.0	10.0

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.*	19.5	19.5	6.0	10.5
Augusta	20.0	21.0	6.0	14.0
Macon	20.0	20.0	6.0	12.0
Savannah	19.0	19.0	6.0	13.0
Birm.ham, Ala.	20.5	20.5	6.0	10.0
Mobile	20.0	20.0	5.0	10.0
Montgomery	21.5	21.5	6.0	12.5
Jackson, Miss.	17.0	17.0	5.5	11.5
Vicksburg	18.0	16.5	5.5	8.0
Jack'ville, Fla.	19.0	19.0	7.0	11.0
Miami	21.0	22.0	7.0	13.0
Pensacola	20.0	20.0	7.0	13.0
Tampa	19.0	19.0	7.0	12.0
Lexington, Ky.	17.0	18.0	5.0	10.0
Covington	17.0	18.0	5.0	12.0
Louisville	15.0	16.0	5.0	11.0
Corbin	18.0	19.0	5.0	15.0

A third grade "Kyso Green," is sold at a price generally 2 cents below the price on the regular grade.

In addition to the state tax of 4 cents on gasoline, Montgomery has city and county tax of 2 cents on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. To Pensacola, Montgomery and Birmingham state taxes add 1-cent levy tax. To Gulfport state tax add privilege tax of 2 cents. To Mobile state tax add 1-cent city tax and 2½ cents county tax.

Effective April 2 price to dealers 3 cents under posted tank wagon price.

*An additional discount of 1 cent is offered to dealers here effective October 6.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atl'tic City, N.J.	15.7	16.7	3.0	11.5
Newark	14.7	15.7	3.0	10.5
Annapolis, Md.	16.2	17.2	4.0	10.0
Baltimore	15.4	16.4	4.0	8.0
Cumberland	17.2	18.2	4.0	12.0
Wash'g'n, D.C.	13.9	14.9	2.0	10.0
Danville, Va.	15.0	19.0	5.0	11.8
Norfolk	16.5	17.5	5.0	10.3
Petersburg	17.5	18.5	5.0	11.3
Richmond	16.5	17.5	5.0	10.7
Roanoke	18.2	19.2	5.0	12.0
Charles'n, W.Va.	16.7	17.7	4.0	11.5
Parkersburg	15.4	16.4	4.0	10.2
Wheeling	16.6	17.6	4.0	11.4
Charlotte, N. C.	17.5	17.0	6.0	10.7
Hickory	19.3	20.3	6.0	12.6
Mt. Airy	19.7	20.7	6.0	12.5
Raleigh	19.4	20.4	6.0	12.2
Salisbury	19.7	20.7	6.0	12.5
Charleston, S.C.	17.5	18.5	6.0	10.2
Columbia	19.4	20.4	6.0	12.2
Spartanburg	19.7	20.7	6.0	12.5

Two cents per gallon discount off retail tank wagon price of gasoline to dealers except Washington, D. C., and States of Maryland and New Jersey, where discount is 3 cents.

Prices shown above are for standard gasoline.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	16.6	17.6	3.0	15.6
New York*	12.3	14.3	2.0	14.3
Buffalo	15.8	15.8	2.0	14.8
Rochester	16.0	16.0	2.0	14.0
Syracuse	16.8	16.8	2.0	14.8
Boston, Mass.	16.5	16.5	3.0	15.5
Augusta, Me.	15.8	15.8	4.0	14.8
Manch'tr, N. H.	13.4	13.4	4.0	14.0
Burlington, Vt.	19.3	19.3	4.0	15.3

*Prices in steel barrels.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	14.9	15.9	4.0	9.25
McCook	17.0	17.0	4.0	7.5
Norfolk	16.75	17.75	4.0	9.75
N. Platte	17.75	18.75	4.0	10.50
Scottsbluff	17.0	17.0	4.0	9.0

Note—Dealers' discount allowed as follows: Red Crown Ethyl, 3 cents off station price; Red Crown, 2½ cents off normal service station price; Nebraska Blue (third grade), 1 cent off normal service station price.

PACIFIC COAST TERRITORY

Standard Oil Co. of California

	Gasoline			Kero.
	Tank truck	Posted retail	Incl'ds tax of	tank wagon
Fresno	12.5	16.5	3.0	17.0
San Francisco	12.5	16.5	3.0	15.5
Los Angeles	12.0	14.0	3.0	15.5
Reno, Nev.	16.0	20.0	4.0	19.0
Portland, Ore.	14.0	18.0	4.0	16.5
Seattle, Wash.	15.0	19.0	5.0	16.5
Tacoma	15.0	19.0	5.0	16.5
Spokane	18.5	22.5	5.0	20.5
Pheonix, Ariz.	14.5	17.0	5.0	20.0

Above prices are at company's plant or depots as company does not operate stations. A 4-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 1 cent.

*Retail prices posted by Standard Stations, Inc., a subsidiary.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N. Orleans, La.	15.5	15.5	6.0	10.0
Baton Rouge	17.0	17.0	5.0	12.0
Alexandria†	14.5	14.5	6.0	12.0
Lafayette*	18.0	18.0	6.0	12.0
Lake Charles*	16.5	16.5	6.0	12.0
Shreveport	17.0	17.0	5.0	12.0
Knoxville, Tenn.	21.5	21.5	7.0	13.5
Memphis	17.5	17.5	7.0	11.0
Chattanooga	20.0	21.0	7.0	11.0
Nashville	20.0	20.5	7.0	12.5
Bristol	20.0	20.0	7.0	14.0
Lt. Rock, Ark.	18.0	18.0	6.0	11.0

*Includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

†Gasoline price at Alexandria includes 1-cent tax in parish of Rapides.

Two-cent discount off gasoline and kerosene tank wagon price to dealer and commercial accounts.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	10.7	6.23
V.M.P. naphtha	12.7	7.73
Cleaners' naphtha	15.2	9.23
Stanisol	15.2	9.23

Tank wagon prices f.o.b. Chicago January 6, 1932. Each of above prices subject to discount of 1 cent per gallon for 150-gallon lots if covered by contracts.

STANOLIND FURNACE OIL IN CHICAGO

Effective July 1, prices f.o.b. Chicago, tank wagon prices: 1 to 99 gallons, 8 cents; 100 gallons or more, 6 cents.

Stanolex Fuel

Effective May 9, f.o.b. Chicago, tank wagon prices: 1 to 199 gallons, 7 cents; 200 gallons or more, 5 cents. Sinclair met this by bringing down the price of its No. 2.

Fuel Oils

Chicago tank wagon prices (in lots of 400 gallons and over): 38-40 straw distillate, 6 cents; 32-36 gas oil (light zero), 5.5 cents; 32-36 gas oil (industrial), 5.25 cents; 28-30 zero fuel oil, 5 cents; 24-26 fuel oil, 4.25 cents; 18-22 fuel oil, 3.75 cents.

TANK WAGON CHANGES

Standard Oil Co. of Kentucky, effective January 19, reduced Crown gasoline tank and service station prices 1 cent at Louisville. Effective January 16, reduced Crown gasoline 1 cent at Covington, Ky. Effective January 15, advanced Crown gasoline tank wagon and service station price 1½ cents at Jackson, Miss. Effective January 18, reduced kerosene tank wagon price at Lexington, Ky., to 10 cents.

Atlantic Refining Co., effective January 19, advanced regular grade 1 cent at Boston, Springfield, Worcester and Fall River, Mass.

Standard Oil Co. of New Jersey, effective January 20, reduced kerosene tank wagon price .7 cent to 10 cents at Washington, D. C.

PATENTS FOR CHEMISTS

The Inventors Publishing Co., Washington, D. C., has issued a book, "The Law of Patents for Chemists," by Joseph Rossman, $3.50. This is an instructive book of 304 pages giving the essentials of patent law, the steps taken when obtaining a patent and the rights under a patent. The discussions are well illustrated with examples which have come before Doctor Rossman as patent examiner of the U. S. Patent Office. Basic inventions should be further protected by additional patents covering minor improvements, as illustrated by the 1,200 patents and applications pending in 1924 concerning the Dubbs cracking process.

CRUDE OIL PRICES

(Continued from Page 157)

High Island (Nov. 2, 1931)† ..... .61

*Gulf Refining Co. †Vacuum Oil Co. ‡Humble Oil & Refining Co. §The Texas Company. ¶Gulf Pipe Line Co.

NORTH LOUISIANA AND ARKANSAS

Smackover, Ark. (all grades) (Nov. 4, 1931) ..... $ .65

Urbana, Ark. .....See note below

Bellevue, La. (June 3, 1931) ..... .35

Urania, La. (Nov. 2, 1931) ..... .50

Calion, Ark. (Aug. 22, 1931) ..... .52

East El Dorado, Ark. (Nov. 4, 1931) ... .55

Stephens, Ark., below 29° (Aug. 24, 1931) ..... .41

Stephens, Ark., 29° and above (Aug. 24, 1931) ..... .44

Other fields.....See gravity table

Note—Smackover, all grades, Standard Oil Co. of Louisiana, The Texas Company, Gulf Refining Co., Magnolia Petroleum Co Bellevue posted by Magnolia Petroleum Co.; Urania by H. L. Hunt, Inc., and Louisiana Oil Refining Co.; Calion by Gulf Refining Co.; East El Dorado by Gulf Refining Co. and Magnolia Petroleum Co.; Stephens, Ark., by Louisiana Oil Refining Co. and Atlantic Oil Producing Co.

SOUTH CENTRAL AND SOUTHWEST TEXAS

Darst Creek (Nov. 2, 1931)‡ ..... $ .60

Luling (Nov. 2, 1931)† ..... .60

Mirando (Nov. 2, 1931)† ..... .70

Pettus (Nov. 2, 1931)* ..... .60

Salt Flat (Nov. 2, 1931)* ..... .60

Thrall§ .....

Lytton Springs (Lockhart) .See gravity table

Dobrowolski¶ .....

Same as Mid-Continent gravity scale up to and including 38-38.9°.

Somerset¶ .....

Same as Mid-Continent gravity scale up to and including 38-38.9°.

‡The Texas Company. *Humble Oil & Refining Co. †Magnolia Petroleum Co. §Thrall prices same as North Central Texas less 19½ cents per cwt. freight. ¶Grayburg Oil & Refining Co., Pioneer Oil & Refining Co. and Texas Petroleum Products. ‖Pioneer Oil & Refining Co.

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective November 3, 1931)

Lima $1.01

Wooster 1.15

Illinois ..... .91

Indiana ..... .90

Princeton ..... .90

Plymouth .....Shut in

Western Kentucky ..... .90

Midland, Mich. (Oct. 9, 1931)* ..... .51

Dundee, Mich.† .....

Same as Stanolind Crude Oil Purchasing Co.'s Mid-Continent gravity scale Upper and Lower Traverse Sands, Mich.†

....Same as Mid-Continent gravity scale

Somerset, Ky. (Nov. 4, 1931) ..... .80

Hart County, Ky. (Jan. 18, 1932)‖ ..... .60

*Posted by Pure Oil Co. †Posted by Standard of Indiana for boat shipment ‡Posted by Stoll Refining Co. Somerset, Ky., crude purchased by Ashland Refining Co., Ashland, Ky., and delivered through its own pipe line.

MEXICO

Panuco* .....$ .45

*F.o.b. ship, based on October transactions and exclusive of production and export taxes and bar dues.

CANADA

Ontario (Nov. 3, 1931):

Petrolia* $1.30

Oil Springs* 1.27

Alberta (Aug. 24, 1931):

Turner Valley†:

Crude oil 45-45.9 ..... 2.03

Crude oil 50 and above..... 2.63

Crude naphtha 2.13

Discolored naphtha 2.33

*Imperial Oil, Ltd. †Imperial Oil, Ltd. and Regal Oil & Refining Co.

Of Interest to Sales Departments

Bureau Collecting Data on Marketing Of Plant Products

WASHINGTON, D. C., Jan. 25.—The Department of Commerce is now engaged in collecting detailed statistics covering the distribution of gasoline and lubricating oils through filling stations. Figures for 25 states have been compiled to date and the remainder of the country is now being covered, it was pointed out. The number of filling stations in each county in the United States and in each town of more than 10,000 population will be given, together with the sales in each and sales per capita and per filling station. The number of auto dealers will be determined as well as their net sales in each county and city. Garages and accessory dealers will be noted in the same manner, it was stated.

In the larger cities, probably those of 50,000 population and more, the sales through these four types of establishments will be broken down to indicate the proportion of gasoline and lubricating oils sold through each type of outlet.

The latest available figures on retail outlets for gasoline and lubricants were drawn up in a nation-wide survey made by Peat, Marwick, Mitchell & Co. for S. F. Bowser & Co., Inc., about the middle of 1927. At that time, as nearly as could be determined, there were 317,000 retail outlets equipped with 614,000 pumps. Estimates indicated that $838,000,000 had been invested in these stations.

If 15 minutes is allowed for serving a car with 5 gallons of gasoline, which is more than twice the necessary time, the Department of Commerce points out, the 814,000 pumps could deliver in an eight-hour day nearly five times the amount of gasoline actually consumed. When it is considered that many stations are open 12 to 16 hours daily, the waste of equipment, labor and supplies is evident.

It was shown in the report that with 317,000 retail outlets in the country, the average gallonage of each amounts to about 30,000, which is considerably below the amount required to render a station profitable. In estimating profits from gasoline sales, stations were divided into three classes.

Class A was selected as a representative two-pump drive-in station located in the country village. Class B was a three-pump drive-in station in the outskirts of a medium-sized city. Class C was a four-pump station in the medium-sized city.

It was estimated that stations in the first group could make a little more than 8 per cent on their investment if their sales amounted to 60,000 gallons a year, but that they would face a loss if they sold only 50,000. Those of class B would lose money on 70,000 and would have to sell about 90,000 gallons in order to

(Continued on Page 164)

DERBY GETS CONTRACT

Derby Oil Co. of Wichita has been awarded the contract to supply 21 army posts and air fields with 800,000 gallons of gasoline between January 1 and June 30, 1932. A contract was awarded the company by the Army through the quartermaster general at Chicago.

The gasoline will go to posts as far north as Selfridge Field, Mich., east to Columbus, Ohio, northwest to Fort Robinson, Neb., and south to Fort Riley, Kans.

The gasoline must meet U. S. Army specification 2-41-G. The fuel will be used in trucks at army posts and air fields.

EXCESS OF TANKERS FOR OIL SHIPMENT BRINGS LOW RATES

Since 1920 expansion in the consumption of petroleum products has been rapid and shortage of tonnage has periodically engendered exceptionally high rates of freight, which induced extensive building programs, according to the 1931 annual report of E. A. Gibson & Co., Ltd. A record of tanker freight rates since the year mentioned clearly shows the boom periods, between each of which is a session of comparative depression until expansion absorbed the influx of new tonnage. These "between peak" periods consistently lengthened, which indicates that the tendency during the last few years has been to overbuild. In 1930 the commencement of world trade depression coincided with a very heavy inflow of newly built tankers. This followed a peak in rates in the first three months of that year after which freights collapsed. The year 1931 can be described without any doubt as the worst year ever experienced by owners of tank vessels. During the whole of the past 12 months the maximum rates obtainable have been insufficient to cover running costs plus depreciation. Fortunately, during the last boom most owners had fixed at least a part of their fleets on period charters the majority of which remained in force for the greater portion of the year. There has, however, been very moderate demand for tonnage and sufficient vessels have been available for charterers' needs.

Three factors, according to the report, which have aggravated the position are (1) the increased speed of modern ships, (2) the alteration of the freeboard scale of tankers and (3) the considerable increase of trade from the Black Sea to the detriment of the longer voyages from the U. S. Gulf and California. Most British owners were content to lay up their free tonnage but Norwegian owners in particular have competed for employment. A united stand on the part of all owners at any time during this depression would in all likelihood have improved the rates of freight to a moderate extent. The only occasion when an upward movement appeared possible was in October following Great Britain's suspension of the gold standard. One or two charters were arranged with freight payable on the basis of gold, but other countries soon followed Great Britain's lead and competition was again introduced which enabled charterers to fix on ordinary sterling terms without any increase in rates to cover the proportionately heavier cost of disbursements and fuel. The total of laid up tonnage has been practically doubled since the end of 1930 and, according to recent figures, there are 114 Diesels and 201 steamers out of commission with a total carrying capacity of over 2,500,000 tons.

Outlook

For the next 12 months the outlook is not encouraging, the report states, yet even the most pessimistic are hardly prepared to consider the prospect of last year's uneconomical conditions being prolonged in 1932. The highly corrosive action on ship's tanks of modern produced spirit makes it necessary to provide larger allowances for depreciation and more owners are beginning to realize that the better and cheaper policy in the long run is to keep their ships out of commission. Sustained demand depends upon a general trade revival and it is hoped there may be some alleviation of the long depression towards the end of 1932. With so large a volume of laid-up tonnage it is reasonable to expect the upward trend to be a gradual process and while improvement is likely in 1932 it is possible that there will be no return to reasonably remunerative rates before the first months of 1933. Long spells of idleness are calculated to curtail the useful life of the older tank steamers and when normal trading conditions are resumed the surplus of tonnage may be taken up more quickly than is generally expected.

PETROLEUM PRODUCTS 39% OF 1926 LEVEL

Taking 1926 as a basis for comparison, petroleum products in December, 1931, were substantially lower than any other class of products, according to Department of Labor index figures. With prices in 1926 figured as 100 per cent, petroleum products in December, 1931, were 39 per cent. The next lowest class was farm products, which were 55.7 per cent of the 1926 level.

The following table gives index figures for the 10 principal groups of products, showing petroleum products were also lowest in November, 1931, and December, 1930:

	Dec. 1930	Nov. 1931	Dec. 1931
All commodities	78.4	68.3	66.3
Farm products	75.2	58.7	55.7
Foods	81.8	70.9	68.1
Hides and leather products	91.2	81.3	79.4
Textile products	72.4	60.7	59.2
Fuel and lighting	70.5	65.0	63.6
Metal and metal products	90.0	86.2	85.8
Building materials	84.4	74.0	73.3
Chemicals and drugs	84.8	74.7	74.7
House furnishing goods	91.3	83.1	81.0
Miscellaneous	66.9	59.7	56.0
Petroleum products	51.1	42.5	39.6

PORTABLE TESTING OUTFIT

The gasoline tax collection department of Nebraska has equipped two inspectors with portable testing equipment to determine the distillation range of gasoline. The inspectors will make the tests of the gasoline at the station at the time the sample is taken. The attendant will be informed at that time whether or not the gasoline meets state requirements.

GASOLINE TAX FOR INSURANCE

A bill has been introduced in the Massachusetts legislature to establish a state fund from the proceeds of an increase in the gasoline tax as a means of providing security for the civil liability of owners of certain motor vehicles and trailers on account of personal injuries caused by their motor vehicles and trailers. It was referred to the House committee on insurance.

INCREASE FRENCH TAX

NEW YORK, Jan. 25. — The French government has presented to Parliament a bill to modify the existing 2 per cent tax on oil imports, the new measure providing for a variation in the tax rate, with a 2 per cent import on crude oil imports, a 4 per cent tax on intermediate products, and a tax of 6 per cent on imports of finished refined products.

Under existing revenue laws, motor fuel produced in France already enjoys a 2 per cent differential over the imported product, and enactment of the present proposal will further favor the domestic product (which makes up but a small part of total French consumption).

PROPOSE I.C.C. CONTROL OF INTERSTATE TRUCKS

The amendment of the Transportation of Explosives Act, which now covers motor vehicles carrying explosives or inflammables on public highways in interstate commerce, so as to cover all motor vehicles used in transporting petroleum products on the public highways is recommended to the Interstate Commerce Commission in a report on the Commission Docket No. 23,400, Co-ordination of Motor Transportation. The report deals with many other phases of transportation in addition to the one concerned with the interstate shipment of petroleum products by trucks.

Those who have made a study of the recommendations state that the proposed legislation would require tank trucks to be built in accordance with the commission's specifications and to be operated in accordance with its rules as well as the frequent filing of reports. Oral argument on the recommendations and conclusions will be heard by the commission at Washington on March 1, 2 and 3. Exceptions to the report are to be filed with the commission by February 9.

The National Automobile Chamber of Commerce has announced it will vigorously oppose the recommendations through briefs and oral argument. It has invited the co-operation of members of motor truck associations and trucks and bus operators and shippers, extending the use of its office in the Transportation Building, Washington, D. C.

The organization holds there is no demand for such regulation from consumers or shipping public, that less than 2 per cent of trucks would be affected, that shipping costs would be increased and that federal regulation is premature until experiments with such laws in the states have demonstrated their constitutionality, practicability, possibility of enforcement and advantages to the public.

TO ENLARGE ASPHALT USE

WASHINGTON, D. C., Jan. 25.—The use of asphalt in road building may be increased as a result of a study now being made by the Bureau of Public Roads, Department of Agriculture, state and highway departments and the asphalt industry. By means of co-operative tests of a great number of samples of liquid asphalts of all classes there is being accumulated a mass of data relative to the fundamental properties not only of asphalt but of other products intended for similar use in road building.

These data will be used as a basis for future agreements on uniform test procedures and uniform specification requirements which will be of great interest to the asphalt industry.—C. E. K.

MODIFY SPANISH LAW

NEW YORK, Jan. 25.—The Spanish Minister of Finance has presented to the Cortes a bill modifying the petroleum monopoly law of 1927, according to reports from Madrid.

Under the terms of the proposed law, the petroleum trade of Spain will be controlled by a new regime. The concession granted in 1927 to "Campsa", the monopoly body, will be cancelled and the petroleum trade guided by a body made up of three members appointed by the government and two by "Campsa."

Shareholders of "Campsa" are to be compensated by the state to the nominal value of their holdings before the end of 1948, with interest at the rate of 5 per cent to be paid up to the date of cancellation, and special indemnity on profits reserved for Spanish holders only.

Oil Securities Firm During Past Week

Failure to Show More Strength Due to Unsettled Conditions in the Gasoline Market But Uncertainty Being Removed

By A. E. Mockler
New York Bureau, The Oil and Gas Journal

NEW YORK, Jan. 25.—Reflecting improved conditions in the petroleum industry and the more favorable outlook for earnings of oil companies this year, the market for oil shares continued firm during the past week.

However, the market has not responded fully to the strength evident in other groups, this being due in large measure to unsettled conditions in the gasoline market. With eastern motor fuel prices, however, showing a tendency to recover in sympathy with the stronger situation in the Mid-Continent, much of the market uncertainty is now being dissipated, and the oils are expected to develop a further sustained upward movement.

Buckeye Pipe

Buckeye Pipe Line has declared the regular quarterly dividend of $1 per share, payable March 15 to stockholders of record February 19.

Royal Dutch

Royal Dutch Co. has omitted the interim dividend usually paid at this time. On January 31, 1931, an interim dividend of 10 per cent was paid by the company.

Sinclair Consolidated

Directors of Sinclair Consolidated Oil Corp. have declared the regular quarterly dividend of $2 a share on the preferred, payable February 15 to stock of record February 1.

Union Oil Associates

Union Oil Associates has reduced the dividend on the $25 par common stock from 50 cents to 34 cents per share, payable February 10 to stockholders of record January 18.

Columbia Gas

Creation of a new class of preference stock with a par value of $25,000,000 was approved this week by shareholders at a special meeting of the Columbia Gas & Electric Corp. Authorization was given the board of directors to create 250,000 shares of 5 per cent convertible cumulative preference stock, par value $100 per share, each share of this class to be convertible at the option of the holder into five shares of common stock any time before February 15, 1937. Directors had recommended creation of the new preferred stock to be used for the payment of stock dividends on the common, which had received $1.50 annually in cash. The preference stock will be junior to the company's present preferred stock and senior to the common.

S. O. Nebraska

Stockholders of Standard Oil Co. of Nebraska have approved a revision of the company's plan for guaranteed retirement annuities for all employes. The company has had a retirement plan in effect providing for the retirement of men at the age of 65 and women at the age of 55, under which retiring employes would receive 2 per cent of their salary for each year of service, paid entirely by the company.

Under the terms of the revised plan, provision is made for the payment of annuities as heretofore up to the date of the change, February 1, next, after which 2 per cent of salary for each year's service will be jointly contributed by employes and by the company. Subscriptions of the former are optional, but in the event of nonsubscription, only 1 per cent of salary for each year's service is paid on retirement.

The plan closely follows that recently announced by Standard Oil Co. (New Jersey) and likewise includes group life insurance protection for employes, the cost of which is paid entirely by the Nebraska company.

Houston Oil

Houston Oil Co. has declared a semiannual dividend of 37½ cents on the preferred stock, payable February 1 to stock of record January 19. The company previously paid 75 cents semiannually.

Tide Water Oil

Tide Water Oil Co. declared the regular quarterly dividend of $1.25 on the preferred stock, payable February 15 to stock of record January 16.

Salt Creek Producers

Directors of Salt Creek Producers Association have declared the regular quarterly dividend of 25 cents per share, payable February 1 to stock of record January 15.

Simms Petroleum

Stockholders of Simms Petroleum Co. have approved the offer of the company to purchase during 1932 not more than 100,000 shares of its own capital stock at an average price of not more than $5 a share. Stockholders will have the right to sell back to the company up to one-seventh of their holdings prior to February 10, with the balance needed to make up the 100,000-share total to be purchased in the open market, if necessary. The company similarly retired 100,000 shares of its capital stock during 1931.

Standard of New York

Standard Oil Co. of New York, with a nominal capital of $2,000, has been incorporated at Wilmington, Del., to preserve the exact name of the old company, merged recently with Vacuum Oil Co. into Socony-Vacuum Corp. Upon consummation of the merger recently, the name of Standard Oil Co. of New York was changed to Socony-Vacuum Corp., and a new company incorporated in New York under the name Standard Oil Co. of New York, Inc., to take over the operating business of the oil company which was transferred to the holding company. Standard Oil Co. of New York, Inc., operates in New York State and New England.

Consolidated Oil

Shares of Consolidated Oil Corp., the proposed company which will effect the merger of Sinclair and the Prairie companies, were admitted to trading on the New York Curb Exchange today on a when as and if issued basis. The listing attracted little interest, however, and only 100 shares were traded the first day. The shares, when issued, are exchangeable share for share with Sinclair and Prairie Oil & Gas capital stocks and on a basis of 1.4 for 1 of Prairie Pipe Line Co. stock. If a full exchange is effected, there will be outstanding 14,218,835 shares of Consolidated Oil Corp.

Amerada Corp.

Amerada Corp. has declared the regular quarterly dividend of 50 cents per share, payable January 30 to stock of record January 15.

Columbian Carbon

Columbian Carbon Co. declared a quarterly dividend of 75 cents, payable February 1 to stock of record January 15. This places the capital stock, represented by voting trust certificates, on an annual basis of $3, against $4 previously. Last year $5 in dividends was paid, the last quarterly payment being $1 on November 2.

Cumberland Pipe

Cumberland Pipe Line Co. has set aside $600,000 to pay the company's first dividend in liquidation, amounting to $20 per share. The dividend will be paid after January 25 on presentation by stockholders of their stock certificates. Liquidation receipt certificates will be issued to each shareholder in connection with the payment of the first dividend in liquidation.

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Wednesday, was as follows:

May 20	19.35	Sept. 23	17.64
May 27	18.35	Sept. 30	16.83
June 3	18.00	Oct. 7	15.86
June 10	19.62	Oct. 14	16.43
June 17	19.23	Oct. 21	17.58
June 24	22.32	Oct. 28	16.80
July 1	22.33	Nov. 4	18.86
July 8	21.24	Nov. 11	18.76
July 15	19.79	Nov. 18	17.69
July 22	21.33	Nov. 25	16.68
July 29	20.68	Dec. 2	16.09
Aug. 5	20.80	Dec. 9	15.38
Aug. 12	21.00	Dec. 16	12.60
Aug. 19	24.25	Dec. 23	12.06
Aug. 26	23.26	Dec. 30	12.31
Sept. 2	22.30	Jan. 6	12.69
Sept. 9	20.28	Jan. 13	13.63
Sept. 16	18.30	Jan. 20	13.14

Anglo-Persian Oil

Stockholders of Anglo-Persian Oil Co., Ltd., have approved an increase in capital from £24,000,000 to £26,500,000. A total of 2,500,000 new shares of £1 each will be issued to effect the acquisition of the preferred shares of Scottish Oils, Broxburn Oil Co., Oakband Oil Co., and the Pumpherston Oil Co.

In a statement to stockholders, Sir John Cadman, chairman, said that the financial position of the companies whose preferred shares were being acquired was good and that their earnings were sufficient to cover the interest on the preference shares of Anglo-Persian to be given in exchange.

Northern Pipe Line

Stockholders of Northern Pipe Line Co. have approved a reduction in capital from $2,000,000 to $1,200,000 and a change in the par value of capital stock from $50 to $10 per share.

New Jersey Employes Stock

Directors of the Standard Oil Co. of New Jersey fixed a price of $30.50 a share at which employes of the company and its subsidiaries may purchase its stock under the company's deferred payment plan. This price is based on the average price of the stock during the last

(Continued on Page 166)

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending Jan. 16)

1931 High	1931 Low	Week ended Jan. 16 Sales	Week ended Jan. 16 High	Week ended Jan. 16 Low	Close Jan. 20	Stocks—		Outstanding capital	Par value	Div. rate	Payable or last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
1	⅛	No sales	..	..	..	Atlantic Lobos		499,448	N.P.	....	5-28-30	..	..	..	..	1	¼
16	6	No sales	..	..	..	Borne Scrymser		$1,000,000	$25	....	10-15-30	56½	44½	46½	25	25	11¼
56	30	100	33½	33½	..	Buckeye Pipe Line		$10,000,000	$50	$1Q	12-15-31	76	53	74½	55	69	39⅞
129½	75	100	81	81	..	Chesebrough Mfg.		$3,000,000	$25	$1Q‡	12-30-31	161	117	210	130	184⅞	104¼
3⅞	1⅝	800	2	1¾	2	Creole Petroleum	(sh)	5,977,872	N.P.	....	.....	17½	9½	11¾	5⅝	7⅞	3
39	20⅝	No sales	..	..	..	Cumberland Pipe Line		$1,500,000	$50	50cQ	6-15-31	114	67	75¾	40	65¾	20¼
36	19	500	23	23	..	Eureka Pipe Line		$5,000,000	$100	$1Q	2- 1-32	88	64⅛	70½	40	54¾	26
3	1	No sales	..	..	..	Galena Signal Oil		$16,000,000	$100	....	.....	13	4¼	6½	3	7	2½
72	44¼	1,700	46⅝	43⅞	..	Humble Oil & Refining		$74,103,300	$25	50cQ	1- 1-32	114¾	59½	128	74½	119	57¼
18¾	7⅝	3,600	8¾	8¼	8¾	Imperial Oil of Canada (new)	(sh)	25,421,768	N.P.	12½cQ	12- 1-31	104	56¾	41	22	30	15
21⅛	5½	300	7	6½	..	Indiana Pipe Line (new)		$3,000,000	$10	25cQ	8-15-31	91⅞	74⅜	41⅞	26	41	14½
15½	7⅜	9,300	9¾	9	10	International Petroleum (new)	(sh)	14,247,088	N.P.	25cQ	12-15-31	55	35	30⅜	15	24	11⅜
17½	5	300	8	7⅞	..	National Transit		$6,362,500	$12.50	25cQ	12-15-31	32⅜	19⅜	25⅛	10⅛	22⅜	11½
14½	5⅞	300	8¾	8¼	9	New York Transit		$1,000,000	$10	25cQ	10-15-31	75	38½	17½	10	21⅜	10⅛
35¼	20	No sales	..	..	..	Northern Pipe Line		$2,000,000	$50	$2SA	7- 1-31	69	56½	63	41	54	26¼
15½	5½	No sales	..	..	..	Penn Mex Fuel		$10,000,000	$25	50c	10-31-31	84	28	44½	20	32	12
23⅞	9¼	No sales	..	..	..	South Penn Oil		$30,000,000	$25	25cQ	12-31-31	71⅞	36¾	60¼	35⅛	45⅞	16⅛
17	7	200	8½	8⅜	9	Southern Pipe Line		$1,000,000	$10	50cQ	9- 1-31	19	15	22½	13	20⅞	8⅜
42	25	No sales	..	..	..	Southwest Pennsylvania Pipe Line		$1,750,000	$50	$1Q	12-31-31	102	70	70	60	64	32
38½	13½	20,100	16⅞	15⅛	16½	Standard Oil of Indiana		$348,175,069	$25	25cQ	12-15-31	95⅞	70⅞	63	45	59⅞	30
23⅝	12⅛	4,400	14⅛	13⅜	13¾	Standard Oil of Kentucky		$25,654,516	$10	40cQ	12-31-31	179¾	122¼	46⅞	29	40½	18⅝
36½	16	300	19	18⅛	16	Standard Oil of Nebraska		$4,649,225	$25	50cQ	12-21-31	54⅞	39⅞	50¼	40	48⅞	34⅝
62½	23	450	28	24	..	Standard Oil of Ohio		$14,000,000	$25	62½cQ	1- 2-32	134	71	129	60	108½	43¼
4½	1	No sales	..	..	..	Swan-Finch Co.	(sh)	34,480	$25	....	1-15-29	23¼	16	18	10	10	4

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus 50 cents extra.

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.
(Complete record week ending Jan. 16)

1931 High	1931 Low	Week ended Jan. 16 Sales	Week ended Jan. 16 High	Week ended Jan. 16 Low	Close Jan. 20	Stocks—		Outstanding capital	Par value	Div. rate	Payable or last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
1¾	¼	1,800	½	⅜	..	American Maracaibo	(sh)	700,000	N.P.	....	.....	9½	3⅛	8⅝	1⅛	4½	½
16⅞	6¼	No sales	..	..	8¾	British American Oil Corp.		1,311,321	N.P.	20cQ	10- 1-31	55	32¾	62	7⅞	23	13⅜
2⅜	¼	800	⅝	⅜	½	Carib Syndicate		$131,250	25c	....	.....	4½	3⅞	4⅞	1	2¾	⅝
20¾	5	42,100	6¾	6⅛	6	Cities Service	(sh)	24,290,359	N.P.	30cA§	2- 1-32	90⅞	54	68⅛	20	44¼	13
84¾	35⅝	1,700	52	48⅛	..	Cities Service pfd.	(sh)	1,500,000	N.P.	50cM	2- 1-32	103¼	94½	98¾	84	93⅞	78¼
½	1/16	600	1/16	1/16	..	Colombia Syndicate		$2,000,000	$1	....	.....	3¼	.76	2	½	¾	⅛
2¾	1	No sales	..	..	..	Consolidated Royal		$5,527,875	$10	5cQ	10-25-31	8⅞	6¼	11⅛	2½	5⅞	2
⅝	⅛	700	½	⅜	..	Crown Central		.....	....	....	.....	..	..	..	..	..	..
5	1¾	200	2	1⅞	..	Darby Petroleum (new)		1,019,392	N.P.	....	10-15-30	33½	3¼	26	6½	21¾	4¼
6	1½	400	2	2	..	Derby Oil & Refining	(sh)	500,000	N.P.	....	.....	2¼	1	11	2	11	2
40⅛	1½	No sales	..	..	..	Derby Oil & Refining pfd.		48,500	N.P.	....	.....	21⅛	7½	44	20¾	60	30
75½	25⅜	6,800	31⅞	29	29	Gulf Oil Corp.	(sh)	4,504,921	$25	....	10- 1-31	165	101⅛	209	115	166⅞	58½
⅝	⅛	1,900	¼	1/16	..	Intercontinental Petroleum		$5,682,000	$5	....	.....	3⅜	1	2⅞	⅜	1¾	⅜
1⅞	¼	200	⅜	⅜	..	Kirby Petroleum	(sh)	750,000	N.P.	....	.....	3	1¼	3⅝	1¼	3	⅞
1½	¼	1,100	½	1/16	..	Leonard Oil & Development		$50,000,000	$25	....	.....	9⅜	5⅛	6⅛	1	4¾	½
6¾	1½	100	2⅛	2⅛	..	Lion Oil & Refining	(sh)	250,000	N.P.	....	10-27-30	43⅞	20	38⅞	18	29	4⅞
25	5½	4,500	9¼	8¼	8⅝	Lone Star Gas	(sh)	5,000,000	N.P.	22cQ	12-31-31	69⅛	48½	67⅞	28	55⅞	19⅝
½	1/16	4,200	⅛	1/16	..	Magdalena Syndicate	(sh)	850,000	$1	....	.....	1⅞	½	1¼	½	½	⅛
5	1⅞	No sales	..	..	..	Margay Oil Corp.		160,000	N.P.	....	7-10-30	48½	32	38½	14	16	3
4⅞	1½	No sales	..	..	..	Mexico-Ohio Oil Co.		500,000	N.P.	....	.....	8	2¾	6⅜	2¼	7½	1¾
½	⅛	No sales	..	..	..	Mountain & Gulf		$4,000,000	$1	....	4-15-31	1¾	.76	1½	½	¾	⅜
5⅞	2	1,200	3	2½	..	Mountain Producers		$1,682,182	$10	20cQ	1- 2-32	28⅞	19½	22⅞	7	12⅛	3¾
1½	½	200	½	½	..	New Bradford Oil		$1,095,291	$5	....	4-15-31	5⅝	4¼	5	2½	3½	1⅛
3	¾	No sales	..	..	..	New Mexico and Arizona		$1,000,000	$1	....	.....	11⅞	7⅛	9⅜	2¼	7¼	1½
3¼	⅝	No sales	..	..	..	North Central Texas	(sh)	400,000	N.P.	....	9- 2-30	14¼	8½	18½	6⅛	11¼	2⅛
½	1/16	300	⅛	1/16	⅛	Pandem	(sh)	489,875	N.P.	....	.....	6	2⅛	3½	½	2½	¼
2	⅜	600	⅜	⅜	..	Pantapec Oil	(sh)	1,506,000	N.P.	....	.....	15⅝	8½	10½	1⅞	4⅜	⅞
3⅛	¾	600	½	½	..	Reiter-Foster	(sh)	388,584	N.P.	....	12- 2-29	12⅞	4⅛	8½	1⅛	5⅜	1
3	¾	100	1	1	..	Ryan Consolidated	(sh)	500,000	N.P.	....	.....	12	4⅛	11	2	8⅝	2
1⅜	⅛	200	⅛	⅛	..	Salt Creek Consolidated	(sh)	1,286,300	$10	....	4- 1-31	7¼	5½	5⅞	1⅞	2½	½
7¾	2¾	1,500	3⅞	3⅜	..	Salt Creek Producers	(sh)	1,496,859	$10	25c	2- 1-32	35	23⅛	25⅞	9	15¼	5¼
5¼	¼	700	½	⅜	⅜	Sunray Oil	(sh)	1,163,185	$5	....	4-15-31	..	..	12	5⅝	10	2
1⅞	¼	100	⅞	⅞	..	Venezuelan Petroleum	(sh)	755,090	$5	....	2-15-30	9⅛	4⅜	6½	1¾	4½	⅜
3½	1⅛	No sales	..	..	..	Woodley Petroleum		$500,000	$1	....	3-31-29	8¼	4⅞	9½	2	5	½
2¼	¼	No sales	..	..	⅜	Y Oil & Gas		100,000	N.P.	....	.....	8⅜	2⅛	2⅞	½	2½	⅜

*Ex-dividend. †Unit of trading less than 100 shares. ‡Payable monthly and mo nthly stock dividend of one-half per cent. §Paid in lieu of regular cash dividend of 2 per cent.

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of the New York Stock Exchange and Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.
(Complete record week ending Jan. 16)

1931 High	1931 Low	Week ended Jan. 16 Sales	Week ended Jan. 16 High	Week ended Jan. 16 Low	Close Jan. 20	Stocks—		Outstanding capital	Par value	Div. rate	Payable or last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
23	11¼	2,100	14	13	..	Amerada Corp.	(sh)	922,075	N.P.	50cQ	1-30-32	43⅞	27⅛	42⅝	17½	31½	16½
12⅜	1¼	900	2½	2	2⅜	American Republics Corp.	(sh)	209,180	N.P.	....	12-31-30	85	51⅛	64¾	12½	37	5⅛
31	8¾	100	9	9	..	Associated Oil		$57,260,300	$25	....	6-30-31	53⅜	37½	47¼	34½	51	30
23⅝	8⅝	12,100	10¾	9⅜	10	Atlantic Refining		$66,763,775	$25	25cQ	12-15-31	66⅜	50	77⅞	30	51⅜	16⅝
14½	4	15,000	5⅞	5	4¾	Barnsdall Corp. A		$56,546,600	$25	....	5-11-31	54	20	49⅛	20	34	8⅝
12	5	16,200	6¾	6¼	6⅝	Continental Oil of Delaware	(sh)	4,741,554	N.P.	....	12-15-27	..	..	47⅞	18	30½	7¾
47	.95⅝	5,200	15½	13¼	14⅝	General Asphalt	(sh)	413,333	N.P.	50cQ	12-15-31	94⅞	68	94¾	42¼	71½	22⅜
68½	15¾	12,200	23⅜	19	20½	Houston Oil		$24,968,600	$100	....	10-17-30	167	79	109	26	116⅞	29¼
4⅝	2⅛	600	1½	1¼	..	Indian Refining		$12,564,070	$10	....	10- 1-30	39⅝	9	53	13⅛	17	2
4½	1	700	1¼	1¼	..	Louisiana Oil Refining	(sh)	1,190,063	N.P.	....	.....	19¾	9⅜	18	7	12	3½
3¾	½	100	⅞	⅞	..	Maracaibo Oil	(sh)	330,000	N.P.	....	.....	25½	12½	18½	5⅛	10⅜	1⅜
16¾	5	2,400	6⅜	5⅝	6	Mid-Continent Petroleum	(sh)	1,857,912	N.P.	....	2-16-31	44½	25⅛	39⅞	22⅛	32	11
19½	5⅛	19,300	6½	5¾	6	Ohio Oil	(sh)	6,648,052	N.P.	....	3-14-31	84	58½	79⅞	64¼	32	16
35⅛	20	No sales	..	..	..	Pan American P. & T.		$50,084,700	$50	40c	1-20-31	50⅞	38¼	69	40½	46½	42
36½	18	900	19	19	..	Pan American P. & T. "B"		$121,110,650	$50	40c	1-20-31	59⅞	37¾	69¼	40½	67¼	30
4¼	⅝	100	1¼	1¼	..	Panhandle P. & R.	(sh)	199,370	N.P.	....	.....	21¾	11½	15¼	3	12¾	1¾
20⅛	5	20	7¼	7¼	..	Panhandle P. & R. pfd.		$2,564,400	$100	....	.....	108	70	76	47½	20	47½
16⅝	4	15,867	5½	5	4⅞	Phillips Petroleum	(sh)	2,593,075	N.P.	....	1- 2-31	53⅞	35¼	47	24¼	44⅝	11½
1½	¼	800	½	⅜	..	Pierce Oil Corp.		$29,622,831	$25	....	.....	5¼	½	3⅜	1	2½	½
3⅜	½	3,200	1⅛	⅞	1	Pierce Petroleum	(sh)	2,500,000	N.P.	....	2-16-31	7	3½	5⅞	½	7⅛	1⅛
20⅜	4⅛	3,100	7	6	5¼	Prairie Oil & Gas		$60,848,000	$25	....	3-31-31	68	46	65⅜	40½	54	11¼
26½	5⅞	32,000	8¾	7½	7⅛	Prairie Pipe Line		$101,250,000	$25	....	6-30-31	280	172	65	45	60	16⅝
6	1	No sales	..	..	1¼	Producers & Refiners		$37,438,950	$50	....	9-15-23	29⅞	16	25⅞	4	11⅞	1
16	3	No sales	..	..	..	Producers & Refiners pfd.		$2,845,350	$50	....	5- 4-25	49⅝	41	46¾	25½	40	11½
11⅞	3¼	6,300	5⅛	4½	4½	Pure Oil		$75,959,250	$25	....	9- 1-30	31⅝	19	30¾	20	27¼	7⅝
6⅝	⅝	1,200	¾	⅝	..	Richfield Oil (new)		$52,410,875	N.P.	....	.....	56	23	49⅝	20	9¾	4⅛
10¼	1¼	1,600	2⅜	2⅛	2¼	Rio Grande Oil	(sh)	1,236,270	N.P.	....	7-25-30	37½	32	42½	15	25¾	5
42⅝	13	14,000	16⅝	14⅜	16⅝	Royal Dutch N. Y.	(sh)	611,303	....	$0.938	8- 4-31	64	44⅝	64	43⅛	56½	36⅞
20¾	5½	19,000	9	7¾	8	Seaboard Oil of Delaware	(sh)	1,244,383	N.P.	....	10- 1-24	72	4⅝	59⅜	8¼	37	9¾
34	5	40	8½	8½	12½	Shell Transport & Trading Co.		£23,985,000	£1	$0.966	7- 6-31	47⅞	41⅜	51½	40⅝	48⅜	26
10¼	2½	11,000	3⅞	3¼	3⅝	Shell Union Oil	(sh)	13,066,497	N.P.	....	6-30-30	39¼	23¼	31⅜	19	25½	5¼
11	3½	500	5	4⅞	..	Simms Petroleum		$8,353,620	$20	....	9-15-30	27½	18⅛	40⅛	15	37	5⅝
15⅞	4⅛	53,600	6⅜	5⅜	5⅝	Sinclair Consolidated	(sh)	5,500,000	N.P.	....	4-15-31	46¾	17⅜	45	21	32	9¾
103	64	500	89	83	..	Sinclair Consolidated pfd.		$16,025,250	$100	$2Q	2-15-32	110	102½	111	103	112¼	86
12⅞	2	800	3⅞	3½	..	Skelly Oil		$27,441,250	$25	....	12-15-30	42⅝	25	40½	28	12	10⅛
21	8⅜	39,600	10⅝	9⅝	10⅛	Socony-Vacuum	(sh)	31,923,072	$25	25c	12-15-31	..	..	..	..	..	..
51¾	23⅛	22,100	27	24⅛	25	Standard of California	(sh)	12,594,098	N.P.	62½cQ	12-15-31	80	63	81⅞	51½	75	42½
19	7¾	1,500	10½	9⅞	12	Standard of Kansas		$8,000,000	$25	....	3-16-31	37¾	15	33¾	18	49	14⅜
15	52½	26	54,700	30½	28⅛	28⅞	Standard Oil of New Jersey		$634,999,200	$25	25cQ§	12-15-31	59⅜	37¾	83	49	84⅞	32½
14½	45¼	26¾	No sales	..	..	..	Sun Oil	(sh)	1,416,869	N.P.	25cQ	12-15-31	77	31½	68⅜	55	70	39
11⅜	1⅜	¼	2,666	½	⅜	..	Superior Oil Corp.	(sh)	766,979	N.P.	....	12-20-30	..	..	24	5¼	9⅜	¾
11½	36¼	9⅞	37,000	13⅞	12¼	12½	The Texas Corporation		$246,204,900	$25	50cQ	10- 1-31	74¾	50	71⅞	50	60½	28¼
10⅛	6½	1⅞	600	2⅜	2⅛	2	Texas Pacific Coal & Oil Co.		$9,304,890	$10	....	12-31-29	26⅝	12⅛	23⅞	9½	14½	4
26¼	18	9⅞	No sales	..	..	..	Tide Water Oil	(sh)	2,191,759	N.P.	....	6-30-31	41½	19⅝	40	14	31	13
12	83	30	300	35⅞	35⅝	..	Tide Water Oil pfd.	(sh)	19,947,000	N.P.	$1.25Q	1-16-32	100⅛	86	97½	85⅛	94⅞	71
16⅛	9	2⅛	10,100	3⅜	3	3	Tide Water Associated	(sh)	5,560,424	N.P.	....	2-16-31	25	14¾	23½	10	17¾	5⅞
8⅝	68	20½	1,100	26¼	25½	25	Tide Water Associated pfd.		$73,284,500	....	$1.50Q	10- 1-31	..	..	90⅞	74⅛	89¾	55
32	26⅝	11	3,400	13⅞	13	12⅝	Union Oil of California		$104,342,375	$25	35cQ	2-10-32	58	42⅜	57	42⅛	50	10⅛
30	25¼	16	400	18	17¼	17	Union Tank Car	(sh)	1,254,048	$100	40cQ	12- 1-31	128⅛	110	163¾	121⅞	38½	23
18⅝	7⅜	⅞	800	1½	1⅜	..	Warner-Quinlan	(sh)	632,948	N.P.	....	7- 1-30	44⅞	26	42⅞	15	27	4¼
34⅝	9⅝	2¾	2,300	4⅛	3¼	4	Wilcox Oil & Gas	(sh)	428,907	N.P.	....	5-10-28	..	..	29¾	12⅞	21	6½
43¾	4																

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus extra dividend of 25 cents.
In comparing highs and lows for the several years in the three tables, it will be necessary to take into consideration cases where there have been stock split-ups.

DISCUSS PROBLEMS OF OIL FIELD ELECTRIFICATION

(Continued from Page 14)

tee, was presented Wednesday morning by W. S. Baugh, chairman, who also submitted in tabulated form the data accumulated as the result of a questionnaire which had been sent to the various members representing companies serving oil refineries. The report was discussed by J. E. Elliott, Shreveport, La. In the general discussion of the report which followed G. R. Prout, General Electric Co., Dallas, called attention to the difficulties of getting refinery business owing to various conditions, but he said a number of completely electrified refineries had been constructed within recent years, and he enumerated some of these jobs.

Standard Voltage for Oil Fields

The report of the Engineering Committee, prepared by Mr. Keck, chairman, was read by George Hengy, Dallas. This report was discussed by V. W. Miller. O. A. Jennings, Oklahoma City, called attention to the numerous distribution voltages and suggested a standard voltage for oil fields, and stated that it was as desirable as standard contracts and rates. Mr. Malory of the Texas Louisiana Power Co., and F. M. Austin, Houston, Tex., also discussed the report. They called attention to the fact that the oil companies were required to carry a large stock of motors and transformers in order to do business with power companies in different sections of the various states in which their operations extend. The engineering committee was urged to give thought to this matter.

The report of the Public Policy and Publicity Committee was presented by O. A. Jennings, chairman, and it was discussed by Mr. Dunton, of Dallas, who suggested the desirability of setting up a rate for offpeak pipe line pumping. Participating in the general discussion which followed were P. M. Cordell, Fort Worth; Edwin Vennard, Shreveport; F. M. Austin, Houston, L. E. Bredberg, The Oil and Gas Journal; Paul Ryan, Midland, Tex., and W. S. Baugh, Wichita. It was generally agreed that as for getting the story of the power companies before the oil industry, the utilities' advertising dollar might be made to earn a greater return. Upon motion of Mr. Baugh, the publicity committee was authorized to draw up a unified advertising plan for submission to company executives.

Upon a motion by Mr. Jennings the following committee was appointed to develop a plan for a combined power companies' display booth at the International Petroleum Exposition to be held in Tulsa in the fall of 1932: W. H. Stueve, P. M. Cordell, F. M. Austin, Mr. Whitlow and D. C. McKee.

G. R. Prout, of the General Electric Co., representing the equipment manufacturers, discussed variable speed motors for pipe line pumping which has been cited by Mr. Heltzel as an advantage of oil engines and he stated that motors were available for this class of service if the oil companies wanted them. He stated that this type motors were less efficient than other types. He called attention to the apparent advantages of the electric motors in oil field pumping service. The paper was discussed by W. D. Turnbull of the Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa., who took occasion to congratulate the convention on its work.

Accurate Cost Data Needed

The report of the Committee on Petroleum Production, was ready Wednesday afternoon. In the absence of W. G. Moore, chairman, the report was presented by S. C. Hogg, Dallas. Mr. Austin, discussing the report, called attention to the lack of accurate cost data available, which also determine the cost of pumping wells with internal combustion engines. Several instances of costs studies conducted by his company had resulted in the company getting additional business. The report was also discussed by E. L. Robinson, Beaumont, Tex.

Mr. Hogg related instances in which actual cost figures had been suppressed, and figures reported to be operating costs given out. Mr. Vennard suggested a manual on electric oil field pumping for a wide dissemination of available information.

C. C. Brown, of the Reda Pump Co., Bartlesville, Okla., said that lease cost rather than well cost is the figure most considered by the production departments of the major oil companies, and related instances where a detailed cost accounting system had paid for itself in the saving effected in the one item of small tools. Mr. Brown said the oil companies are now employing more engineers than formerly and they are in a position to determine with engineering accuracy just what they are doing. He discussed the unit plan of operation and said that under this operation 90 per cent of the available oil in East Texas might have been produced by flowing the wells and that, of course, this was no longer possible.

Standard Forms Urged

The report of the committee on standard form of rate and contracts was discussed by Mr. McKee, who said that he generally could agree with the forms suggested by Mr. Keller. Mr. Vennard stated that he would recommend its use to his company with reservations as to form of rate. He agreed with the form of contract. Mr. Levy speaking for oil pipe line companies, urged the convention to do something towards uniformity of rates and contracts. Mr. Jennings stated that there were things about the contract that he would like to see changed and suggested further study. Walter C. Blair, Dallas, told his experience in getting contracts from the railroad companies for electric service and stated that his company had developed a form of contract for this class of service which meets with the general approval of the railroad companies. He and Mr. McKee suggested referring the matter to the oil companies to obtain their reaction to the proposed form of contract. It was decided to continue this committee and carry on further study. Chairman Graham in summing up the work of this convention called attention to the N.E.L.A. pamphlet on electric pipe line pumping, which will be ready for distribution in a short time. Mr. Graham also called attention to the absence of commercial managers of the companies operating in Texas. He emphasized the importance of showing the necessity of the Petroleum Electric Power Club and its work to the commercial executives of the companies represented.

Companies Represented

Following is a list of those registering, with the companies represented by them: A. Arutunoff, Reda Pump Co., Bartlesville, Okla.; F. M. Austin, Houston Lighting & Power Co., Houston, Tex.; J. E. Barfield, St. Joseph, Railroad, Light, Heat & Power Co., St. Joseph, Mo.; W. S. Baugh, Kansas Gas & Electric Co., Wichita, Kans.; Walter C. Blair, Texas Power & Light Co., Dallas, Tex.; M. M. Boggess, General Electric Co., Kansas City, Mo.; C. C. Brown, Reda Pump Co., Bartlesville; J. M. Brown, Oklahoma Gas & Electric Co., Oklahoma City, Okla.; C. L. Browning, Texas Electric Service Co., Big Spring, Tex.; P. M. Cordell, Texas Electric Service Co., Fort Worth, Tex.; Pat Dillard, Texas Electric Service Co., Fort Worth; C. O. Dunton, Central & Southwest Utilities Co., Dallas; Joseph E. Elliott, Southwestern Gas & Electric Co., Shreveport, La.; F. A. Graham, Kansas City Power & Light Co., Kansas City; J. G. Hailey, Texas Power & Light Co., Dallas; George C. Hengy, Texas Power & Light Co., Dallas; W. G. Heltzel, Stanolind Pipe Line Co., Tulsa; S. C. Hogg, Texas Power & Light Co., Dallas; F. M. Jacobson, Continental Oil Co., Fort Worth; O. A. Jennings, Oklahoma Gas & Electric Co., Oklahoma City; T. P. Johnson, Texas Electric Service Co., Fort Worth; A. H. Keen, General Electric Co., Fort Worth; Ralph Kelly, Westinghouse Electric Co., St. Louis, Mo.; R. D. Kelly, Pure Oil Co., Fort Worth; D. H. Levy, Magnolia Pipe Line Co., Dallas; Dan L. Mahoney, Stanolind Crude Oil Purchasing Co., Fort Worth; D. C. McKee, Empire District Electric Co., Joplin, Mo.; O. H. Powell, Stanolind Pipe Line Co., Fort Worth; G. R. Prout, General Electric Co., Dallas; T. W. Rhoads, Gulf Production Co., Fort Worth; E. L. Robinson, Gulf States Utilities Co., Beaumont, Tex.; Paul Ryan, Texas Electric Service Co., Midland, Tex.; C. S. Sanders, Stanolind Oil & Gas Co., Fort Worth; R. T. Shiels, General Electric Co., Dallas; E. D. Stewart, Westinghouse Electric Co., Dallas; W. H. Stueve, Oklahoma Gas & Electric Co., Oklahoma City; Jack Swindell, Westinghouse Electric & Manufacturing Co., Dallas; W. D. Turnbull, Westinghouse Electric Co., Pittsburgh; A. R. Watson, Gulf States Utilities, Beaumont; G. H. Weckel, Kansas Gas & Electric Co., Wichita, Kans.; S. N. Van Wert, Reda Pump Co., Bartlesville; Edwin Vennard, Southwestern Gas & Electric Co., Shreveport.

JUST THE RIGHT MOMENT CHOSEN BY MacARTHUR

(Continued from Page 16)

finished. On the way to Sistersville it was necessary to walk across a high railroad trestle about 400 feet long spanning Polecat Hollow. In the center of the hollow ran Polecat Creek, a wide and angry stream in times of high water.

Adventure? All Right, Just a Minute!

The two tired coal shovelers, one a Brown University man and the other a graduate in mechanical engineering from Cornell University, started their 4-mile trudge to Sistersville together. Melting snow had left the railroad ties of the Polecat Creek trestle wet and slippery. Furthermore, the ties had been set at irregular intervals and it was necessary to walk with extreme caution to avoid falling between them to injury or death in the hollow below. The two were near the middle of the trestle when they heard a passenger train whistling for a bend a short distance back.

Quick decisions had to be made. Young Moody elected to run for the end of the trestle, accepting the chance that he might be overtaken by the train or that he might make a misstep and drop into the black ravine beneath. A kind providence guided his long legs and he reached solid ground safely.

Bob MacArthur had previsioned such a situation as this and he had told himself that if he ever should get caught in it he would just let himself down to the projecting end of one of the cap timbers supporting the stringers on which the ties were laid, and there sit in comparative comfort till the train passed. In his imagination the thing had been extremely simple, something like stepping aside to let the lady leave the elevator first. But with the rumble of the train now filling his ears, inky darkness shrouding the skeleton-like structure under him and each step treacherous at best—oh, it was quite different. He found a projecting beam and clambering down, straddled it. The thing afforded a precarious seat extending about 12 inches beyond the stringer. The whole trestle was shaking now under the impact of the train. It hadn't done that in his mental rehearsals and the timbers hadn't been slithery with melting snow. He leaned as far out as his perilous hold would permit and waited for whatever was to happen.

Longest Train in History

That was the longest train in railroad annals. As the locomotive roared a few inches above him Bob ducked his head to save it from being smashed by the drivers. Unhappy centuries passed before the diminishing clank-clank of the wheels told him the train at last had rolled by, and he opened his eyes to see the red taillights receding from view. A dazed young man managed to crawl up to the ties and start shakily toward the end of the trestle.

"Did Nelson make it?" was the thought that now entered Bob's mind. "Did Bob make it?" was the question that entered the other's.

"Are you all right, Mac?" came out of the darkness.

"Yep," was the response from between teeth that would chatter a little.

And that was that.

This harrowing experience led the two to devise a plan designed to eliminate the need of coal as an auxiliary fuel at the pump station and thus of course to eliminate much coal shoveling, the 4-mile walk to Sistersville and any repetition of that terrifying ordeal on the trestle. Their plan was to insulate all pumps, boilers and steam lines and thus conserve the heat produced by the available gas. They put their plans in the form of a written report, which they presented to Colonel Carter at the first opportunity.

Colonel Carter looked over the report, laid it on his desk and remarked, "Very interesting."

Coal continued to be shoveled as usual.

Goodby, Coal Shovel

After a while the present Barnsdall manager was tried out in other kinds of work. He dressed tools, pumped wells and helped in the building of rigs and tanks. It was Colonel Carter's breaking-in process, not a particularly fascinating one maybe, but it was thorough, efficacious and produced more than one leader in the oil industry. A job in the leasing department came in the course of time and Bob did some surveying, putting to use things he had learned in his university days. And when he was made a lease foreman he had a broad foundation of practical experience on which to build. It was not long before he became district superintendent, overseeing wild-

AT THE END OF A PERFECT DAY

Left. to right: Paul Hubbard, production engineer, Gulf Production Co., Houston; John Meyers, American Hammered Piston Ring Co., and Horace Kime, Robinson Packer Co.

Men, well known in the oil business in Texas, demonstrate they are "right there" when it comes to hunting.

catting operations in a large area of the Sistersville region.

The Carter Oil Co. had become a subsidiary of the Standard Oil Co. and in 1904 Mr. MacArthur was transferred to the South Penn Oil Co., also a Standard subsidiary, as superintendent of its production operations in the Smithville, W. Va., district, under W. J. Young, vice president and manager, who was reorganizing the company. Two years later he was sent to Mannington, W. Va., and put in charge of the South Penn's water and gas department. He had been in this position only three months when in March, 1906, on 24 hours' notice he was sent to Oklahoma to serve as a field superintendent for the Barnsdall Oil Co., on whose properties at this time the Standard had a lien to protect a loan.

Remained With Barnsdall

Mr. MacArthur was one of five men thus transferred from the South Penn Oil Co. to positions with the Barnsdall company. He has continued since that time with the Barnsdall organization, which, adopting an aggressive clear-visioned policy, won and held a strong place in the oil industry. After serving for 10 years as field superintendent of the southern half of the Osage territory, Mr. MacArthur was promoted to manager of the company, which position he now holds.

In 1903 Mr. MacArthur married Miss Nellie Young, of Boonville, Mo. They reside in the same house in North Cheyenne Avenue, Tulsa, which they entered 26 years ago upon moving to that city from Smithville, W. Va. Mr. MacArthur has a 71-acre farm on the No. 11 State highway about 15 miles east of Tulsa, near the Indian Hills Country Club. Here he and Mrs. MacArthur pass week-ends and much of the rest of the time. Four hundred White Wyandotte chickens are objects of Mrs. MacArthur's solicitous watch and ward.

Although Mr. MacArthur rarely or never hunts, firearms and the explosives used in them are his hobby, and much of his leisure time is devoted to experiments with revolvers and rifles. He discusses ballistic curves, muzzle velocities, jumps, sights and angles of departure as familiarly as he does bottom water, back pressure and gas-oil ratios. He is a Mason and a member of the University Club of Tulsa.

MARTIAL LAW RULINGS BY SUPREME COURT

(Continued from Page 18)

The court then says:

"Martial law is the will of the commanding officer."

In United States vs. Fischer, 280 Fed. 208, the court said:

"When a state of war or insurrection exists, and the governor has legally called into action the military forces of the state, the will of the commander becomes the controlling authority of the occupied territory, so far as he chooses to exert it, subject to the laws and usages of war."

Governor's Discretion

Chief Justice Taney, in Luther vs. Borden, 7 How. 1, 18 U. S. (L. Ed.) 581, said:

"The State itself must determine what degree of force the crisis demands. And if the government of Rhode Island deemed opposition so formidable and so ramified throughout the State as to require the use of military force and a declaration of martial law, we see no ground upon which this court can question its authority."

Judge Rufus Foster, now United States circuit judge for the fifth circuit, in the case of United States vs. Wolters, 268 Fed. 69, uses the following language:

"There is no doubt that by the constitution and laws of Texas the governor is charged with the duty of enforcing the laws of the State and has authority to call out the militia to enforce the law in case of riot, or breach of the peace, or imminent danger thereof. The question as to whether there is a riot, or insurrection, or breach of peace, or danger thereof, is one solely for the governor. The courts will not interfere with his discretion in that and will not inquire as to whether or not the facts justify the governor."

In United States vs. Fischer, 280 Fed. 208, the court said:

"The governor may make the ordinary use of soldiers to suppress an insurrection, and his declaration of the existence of a state of insurrection is conclusive."

Sole Judge of Facts

The Supreme Court of the United States, in Matton vs. Mott, 12 Wheat. 19, said:

"Whenever a statute gives a discretionary power to any person, to be exercised by him upon his own opinion of certain facts, it is a sound rule of construction that the statute considers him the sole and exclusive judge of the existence of these facts."

Justice Holmes' Opinion

Moyer vs. Peabody, 212 U. S. 78, was a suit for damages against a former governor of Colorado, a former adjutant general of that State, and a captain of the national guard. Plaintiff alleged he was imprisoned without due process of law by the defendants from March 30, 1904, to June 15, 1904. The defendants justified their acts by showing that plaintiff was arrested and imprisoned during the existence of martial law. Justice Holmes wrote the opinion of the court. After pointing out that by proclamation of the governor an insurrection was declared to exist and martial law declared, the learned judge then proceeded to state the power thereupon vested in the governor.

"That means he shall make the ordinary use of the soldiers to that end; that he may kill persons who resist, and, of course, that he may use the milder measure of seizing the bodies of those whom he considers to stand in the way of restoring peace. Such arrests are not necessarily for punishment, but are by way of precaution, to prevent the exercise of hostile power. So long as such arrests are made in good faith and in the honest belief that they are needed in order to head the insurrection off, the governor is the final judge and cannot be subjected to an action that he had not reasonable ground for his belief. . . .

"No doubt there are cases where the expert on the spot may be called upon to justify his conduct later in court, notwithstanding the fact that he had sole command at the time and acted to the best of his knowledge. This is the position of the captain of a ship. But, even in that case great weight is given to his determination and the matter is to be judged on the facts as they appeared then and not merely in the light of the event. Lawrence vs. Minturn, 17 How. 100, 110, 75 L. Ed. 58, 62; The Star of Hope, 9 Wall. 203, 19 L. Ed. 638; The Germanic (Oceanic Steam Nav. Co. vs. Aitken) 196 U. S. 589, 594, 595, 49 L. Ed. 610, 613, 25 Sup. Ct. Rep. 317."

Further on Justice Holmes said:

"When it comes to a decision by the head of the state upon a matter involving its life, the ordinary rights of individuals must yield to what he deems the necessities of the moment."

"Public danger warrants the substitution of executive process for judicial process."

Chief Justice Taney's Decision

The Supreme Court of the United States, in Luther vs. Borden, 7 How. 1, had before it an action in trespass brought by Luther against Borden and others. The action was grounded on the fact that the defendants had, acting without a warrant, broken into and entered plaintiff's home and endeavored to arrest him. The defendants justified their acts by asserting that a state of insurrection existed, and that martial law had been declared. Chief Justice Taney wrote the opinion of the court. He said:

"The remaining question is, whether the defendants, acting under military orders issued under the authority of the Government, were justified in breaking and entering the plaintiff's home. In relation to the act of the legislature declaring martial law, it is not necessary in the case before us to inquire to what extent, nor under what circumstances, that power may be exercised by a state. Unquestionably, a military government, established as a permanent government of the state, would not be a republican government, and it would be the duty of Congress to overthrow it. But the law of Rhode Island evidently contemplated no such government. It was intended merely for the crisis, and to meet the peril in which the existing government was placed by the armed resistance to its authority. It was so understood and construed by the state authorities. And, unquestionably, a state may use its military power to put down an armed insurrection, too strong to be controlled by the civil authority.

Power Essential

"The power is essential to the existence of every government, essential to the preservation of order and free institutions, and is as necessary to the states of this union, as to any other government. The state itself must determine what degree of force the crisis demands. And if the government of Rhode Island deemed the armed opposition so formidable, and so ramified throughout the State as to require the use of its military force and the declaration of martial law, we see no ground upon which this court can question its authority. It was a state of war, and the established government resorted to the rights and usages of war to maintain itself, and to overcome the unlawful opposition. And in that state of things, the officers engaged in its military service might lawfully arrest anyone, who, from the information before them, they had reasonable grounds to believe was engaged in the insurrection; and might order a house to be forcibly entered and searched, when there were reasonable grounds for supposing he might be there concealed. Without the power to do this, martial law and the military array of the government would be mere parade, and rather encourage attack than repel it. No more force, however, can be used than is necessary to accomplish the object. And if the power is exercised for the purpose of oppression, or any injury wilfully done to person or property, the party by whom, or by whose order, it is committed, would undoubtedly be answerable."

Gov. Rolph Requests Reeser to Report on California Industry

E. B. Reeser, president of the Barnsdall Corp., is in California to confer with Gov. James Rolph, Jr., relative to a report Governor Rolph desires Mr. Reeser to make on the petroleum industry in California. The petroleum industry feels a signal honor has been conferred on Mr. Reeser by his selection for the important work. The invitation to make the survey was contained in the following telegram sent Mr. Reeser by Governor Rolph:

"I have under consideration question of putting the referendum on the Sharkey oil conservation measure on the May primary ballot in this State. In this and other connections I have been looking around for some time for someone from whom I could get a disinterested report on the condition of the oil industry in this State. Because of your broad contact and experience in the industry and the fact that you have served the American Petroleum Institute as its president for three terms, may I ask you in the interest of conservation and of the oil industry in general to come to California to make a survey and report to me so that I may have the best advice in my efforts to aid this great and important industry on whose prosperity so many hundreds of thousands of our citizens depend. With kind personal regards. Very sincerely yours."

CALIFORNIA CRUDE OIL PRICES

(Continued from Page 157)

ASSOCIATED OIL CO. PRICES

Associated Oil Co. prices effective June 20 are as follows:

Ventura Avenue, 22 gravity, 58 cents, with 2 cents added for each degree upward to and including 30 gravity, which is 74 cents.

Kettleman Hills, 30 gravity and above, 66 cents.

Potrero, 24 gravity, 69 cents, with 2 cents added for each degree upward to 34 gravity which is 69 cents.

General Petroleum Co. in Kettleman Hills, effective January 1, 1932: 33-33.9 degrees, 66 cents; 34-34.9 degrees, 68 cents; 35-35.9 degrees, 70 cents; 36-36.9 degrees, 72 cents, 37-37.9 degrees, 74 cents; 38-38.9 degrees, 76 cents; 39-39.9 degrees 78 cents.

UNION OIL CO. OF CALIFORNIA

Crude Oil Prices for Its Purchases at the Well for Crude Produced in Strict Accordance With the Production Allocations Made by the California Statewide Curtailment Committee Effective 7 a.m., June 20, 1931

(All gravities above these quoted take highest price for that field)

Gravity °A.P.I.	Signal Hill	Alamitos Heights Seal Beach	Huntington Beach	Athens, Rosecrans, Domingues	Torrance	Santa Fe Springs	Playa Del Rey* E. Coyote.	Richfield	Montebello	Santa Paula	Orcutt	Coalinga	Lost Hills	McKittrick, Kern River, Sunset-Midway, Elk Hills, Buena Vista Hills	Gravity °A.P.I.
11-13.9	....	....	....	....	....	....	....	....	....	....	....	....	....	$.50	11-13.9
14-14.9	$.65	$.65	$.65	....	$.65	....	....	$.65	$.65	$.65	$.55	$.55	$.55	.55	14-14.9
15-15.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	15-15.9
16-16.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	16-16.9
17-17.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	17-17.9
18-18.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	18-18.9
19-19.9	.65	.65	.65	....	.65	....	$.65	.65	.65	.65	.55	.55	.55	.55	19-19.9
20-20.9	.65	.65	.65	....	.65	....	.65	.65	.65	.65	.56	.55	.55	.55	20-20.9
21-21.9	.65	.65	.65	....	.65	....	.66	.66	.65	.65	.57	.55	.57	.55	21-21.9
22-22.9	.65	.65	.65	....	.66	....	.67	.67	.65	.65	.59	.55	.59	.56	22-22.9
23-23.9	.67	.67	.67	....	.67	....	.68	.68	.65	.65	.61	.55	.60	.58	23-23.9
24-24.9	.69	.69	.69	$.69	.68	$.65	.69	.69	.65	.66	.63	.55	.62	.61	24-24.9
25-25.9	.71	.71	.71	.71	.70	.65	.70	.70	.65	.68	.65	.57	.64	.64	25-25.9
26-26.9	.73	.73	.73	.73	....	.65	....	.72	....	.70	.67	....	.66	.66	26-26.9
27-27.9	.75	.75	.75	.75	....	.68	....	.74	....	.72	....	....	.67	.68	27-27.9
28-28.9	.77	....	....	.77	....	.71	....	....	....	.74	....	....	.69	.71	28-28.9
29-29.9	.79	....	....	.79	....	.73	....	....	....	.76	....	....	.71	.74	29-29.9
30-30.9	.81	....	....	.81	....	.75	....	....	....	.78	....	....	.72	.76	30-30.9
31-31.9	....	....	....	.83	....	.78	....	....	....	....	....	....	....	....	31-31.9
32-32.9	....	....	....	.85	....	.80	....	....	....	....	....	....	....	....	32-32.9
33-33.9	....	....	....	.87	....	.83	....	....	....	....	....	....	....	....	33-33.9
34-34.9	....	....	....	.89	....	.85	....	....	....	....	....	....	....	....	34-34.9

*Subject to a gathering charge of 5 cents per barrel.

DATA ON MARKETING OF PLANT PRODUCTS

(Continued from Page 159)

make the same interest on their investment.

Stations in the third group, moreover, would lose money on sales totaling 100,000 gallons a year and would have to sell approximately 125,000 gallons in order to compete with the other two classes.

It was estimated further that there were 113,000 Class A stations selling an average of only 50,000 gallons, 6,000 in Class B averaging 60,000, and the same number in Class C averaging 90,000. This brought the total loss for these 125,000 stations to around $73,600,000.

FIELD OPERATIONS SUFFERED IN 1931

(Continued from Page 15)

Parish, Louisiana; Manvel, Brazoria County, Texas; Cameron Meadows, Cameron Parish, and Iowa, on the Calcasieu-Jefferson Davis Parish line in Louisiana. All of these save the Beach Field are under controlled ownership and development will be withheld until conditions warrant further activity. The Montgomery County discovery may be followed up by a general wildcatting play in the county. Important extensions were made in Barbers Hill, East Hackberry, Humble and Markham.

In Southwest Texas

In Southwest Texas, 589 fewer wells were completed last year than in 1930. Some new producing areas were uncovered but in only one of these, the Schoolfield-O'Byrne extension in northwestern Duval County, did any appreciable development work follow. There was a revival of development work in the Escobas Pool late in the year and an important extension to the Pettus Pool in Bee County appears to have been opened.

In Other Texas Fields

The big West Texas division was a very dull region last year so far as field work is concerned. Only 321 wells were completed, or 412 fewer than in 1930. The new oil wells averaged only 317 bbls. per well in initial production while those of the year before averaged 723 bbls. per well. A similar condition prevailed in the Panhandle fields. Fewer wells were drilled than in the year before and they averaged much smaller in initial production. In the North Central Texas Field 1,055 wells were completed as against 2,909 in 1930 but only 300 of the completions were productive of oil, while 677 drilling wells proved dry.

Louisiana-Arkansas Division

The division made up of North Louisiana, the Texas counties along the Louisiana border, Arkansas and Mississippi did no more last year than to discover several promising gas fields in Louisiana. Thirty-six new gassers were drilled in Mississippi, or five more than in 1930, but they were all in proven territory.

In the Rockies

Drilling operations in the Rocky Mountain fields of Montana, Wyoming, Colorado, Utah and New Mexico fell off 58 per cent last year, compared with the record of 1930, and the exploration work uncovered no oil pools of importance. One gas field was opened on the Powder Wash structure in northwestern Montana and the Greasewood Dome in Weld County, Colorado, was extended half a mile north and three-quarters of a mile southwest. In Wyoming new pay sands were found in three old fields and the productive area of five pools was extended. The Hobbs Pool in Lea County, southeastern New Mexico, was outlined in the course of the year. Development work there was held back because the field was under proration.

Kettleman Hills' Big Wells

In California Kettleman Hills was developed to the extent of 23 new oil wells which were credited with an average initial production of 10,000 bbls. per well. Playa del Rey was the most active field in drilling, and 66 new oil wells were completed in that field. Only 246 new oil wells were drilled in the State in 1931. The previous year 755 oil wells were brought in. Last year's crop of completions averaged 1,481 bbls. per well as against 774 bbls. in the previous year, due to the large initial production of the Kettleman Hills completions.

New Field in East

In the fields east of the Mississippi River the only important discovery last year was the extension of the Mount Pleasant Field, when the Kalamazoo Improvement Co. brought in a 1,000-bbl. initial producer in the SW Section 15-14n-2w. Twenty-eight oil wells were added to the Midland Field in Midland County, which averaged a little over 1,000 bbls. per well in initial output. Eighteen other wells were added to the Isabella County side of the field.

In the older fields of the East drilling was kept down by the low crude oil market and because of the curtailment of production in the Pennsylvania grade fields. It was the dullest year in many years in the Eastern Fields.

F. S. FALES ELECTED PRESIDENT OF STANDARD OIL CO. NEW YORK

NEW YORK, Jan. 25.—Frederick S. Fales today was elected president of the Standard Oil Co. of New York, succeeding Charles F. Meyer, who resigned, but will continue as a director.

Frederick S. Fales

Mr. Meyer also retired as a director of the Socony-Vacuum Corp., the parent organization of Standard of New York. His place on the board will be filled by Richard P. Tinsley, treasurer of Standard Oil of New York and secretary-treasurer of the Socony-Vacuum.

The new president of the New York Standard joined the Standard organization in 1903. In 1919 he was elected a director of the Standard Oil Co. of New York and president of the Standard Transportation Corp., which conducts its marine activities.

Richard P. Tinsley

SHELL-ANGLO PERSIAN MERGE MARKET BRANCHES

(Continued from Page 153)

public and to preserve to the new company that outlet for their products which the two parties have already established.

"Consequent upon this Shell-Mex, Ltd., ceased to trade after December 31, and all trading obligations and outstanding contracts were transferred as from January 1 to the new company, which is authorized to make or receive any payments due from or to the former on their behalf.

"Special emphasis is laid on the fact that the new organization is continuing to market the well-known brands hitherto distributed by Shell-Mex, Ltd., and the British Petroleum Co., Ltd., which will retail all their original distinctive characteristics.

"For the time being there will be no change in the general arrangements now in force with regard to accountancy, office addresses and personnel, etc.

"In connection with the reorganization of these groups the following new companies have been registered:

"Shell Refineries, Ltd.—Registered as a private company, with a nominal capital of £100 in £1 shares (50 'A' and 50 'B'). The objects are to acquire all or part of the undertaking, assets and liabilities of Shell-Mex, Ltd., and to carry on the business of producers, refiners and distributors of petroleum, etc. The number of directors is not to be less than 8 nor more than 14, of which a majority, and in case there are 8, not less than 5, are to be naturalized British subjects. Half of the directors shall be 'A' directors and half 'B' directors. Any 'A' director may be removed by the Shell Marketing Co., Ltd., and any 'B' directors by the Eagle Oil & Shipping Co., Ltd.

"Scottish Oils and Shell-Mex, Ltd.—Registered at Edinburgh as a private company, with a nominal capital of £100 in £1 shares. The objects are to acquire, deal in, sell and distribute mineral oils of all kinds and all products derived from shale, coal, etc.

"Shell and B. P. (I. F. S.), Ltd.—Registered in Dublin as a private company with a nominal capital of £100,000 in £1 shares, to carry on the business of producing, refining, storing, transporting, selling and distributing petroleum and other oils, etc."

Anglo-American Oil Co., Ltd., British subsidiary of Standard Oil Co. (New Jersey) recently refused an invitation to join the Shell-Mex and B. P., Ltd., marketing combine in the United Kingdom.

SUMMONS OFFICIALS OF THE TEXAS COMPANY

AUSTIN, Tex., Jan. 25.—On application of Attorney General James V. Allred, District Judge J. D. Moore, Monday directed President R. C. Holmes and other officials of The Texas Company to appear in Austin, February 8, to testify and to produce the National Petroleum Marketing code, numerous price change notices, 100 telegrams and 200 letters in the attorney general's penalty and ouster suit against 15 oil companies.

Officials named in the order were Mr. Holmes, C. B. Ames, F. T. Menley, W. S. S. Rodgers, E. M. Crone, J. P. Gruet and W. H. Dodge, of New York, and T. J. Donoghue, G. L. Noble and J. S. Leach, of Houston, Tex.

START WORK ON NEW REFINERY IN FRANCE

(Continued from Page 153)

Jersey and associates. At the present time, largely through the influence of France, a 1,000-mile pipe line is under construction from the Iraq Field to the seaport.

For the Normandy refinery, the contract for primary crude distillation equipment is for a total of 15,000 bbls. per day of crude, this to be processed in two 7,500-bbl. per day crude distillation units. These units will continuously produce six specification products with flexibility to produce a total of 8 to 10 specification products with changes in automatic control equipment.

The primary crude distillation equipment has been designed to operate on Mesopotamia (Iraq) crude with flexibility to handle crudes having specifications similar to certain typical American crudes. The primary distillation equipment will consist of McKee radiant heat type tubular furnace, primary fractionating column, gasoline rectifying column with the necessary heat exchangers, reboilers, reflux condensers and cooling coils.

The French government regulations require that all material is to be furnished of French origin, unless evidence can be submitted to a control board that such equipment is not available in France. The Normandy refinery, when completed, will have equipment for the production of gasoline and gasoline distillates; kerosene and kerosene distillates; internal combustion engine fuel oils; lubricating distillates; asphalt process equipment; asphalt filling and barreling equipment; cracking equipment; re-run units; necessary auxiliary equipment such as steam plant, power plant, water supply pump house and fire protection equipment, etc.

MAPES NOW CHAIRMAN OF A.I.M.E. SECTION

At the annual meeting of the Mid-Continent section of the American Institute of Mining and Metallurgical Engineers held in Tulsa, Clarel B. Mapes, assistant secretary, Mid-Continent Oil and Gas Association, Tulsa, was elected chairman for 1932. Mr. Mapes succeeds Harry H. Wright.

The other officers elected were Colin C. Rae, Skelly Oil Co., Tulsa, first vice chairman; H. H. Wright, consulting geologist, second vice chairman, and I. W. Alcorn, Oil Well Supply Co., Tulsa, secretary-treasurer. The executive committee is made up of H. H. Wright, H. H. Power, Lawrence Ogden and Raymond Carr.

Following the business session, J. G. Martin of the Ethyl Gasoline Corp., Tulsa, gave a very interesting discussion of "Ethyl Gasoline," using demonstrating apparatus to show the effect of knocking in gasoline engines and methods of eliminating it.

RICHARD STRESAU DEAD

Richard Stresau, of Milwaukee, Wis., died suddenly of heart failure January 13. Born in Galveston, Tex., 51 years ago and graduated from the Massachusetts Institute of Technology in 1904, he first went to work for an uncle who was engaged in the electrical business in Europe. Later he returned to this country and did important engineering work for the government during the war. In 1919 he joined the A. O. Smith Corp. and he continued in its service till his death. He was particularly noted for his engineering contributions in the field of electric welding.

W. E. KIERN DIES FROM BURNS

W. E. Kiern, stillman at the Sugar Creek (near Kansas City) refinery of the Standard Oil Co. (Indiana) died January 21 from burns received the previous day at a plant fire. Leon I. Sutton was also seriously burned. The fire was confined to a pipe still with only slight damage to property.

GEOLOGISTS REVISE NAMES OF OIL FIELDS IN SOUTH TEXAS

A revised list of names for Gulf Coast fields, salt domes and prospect areas has been approved by the Houston Geological Society, which has been co-operating with the San Antonio Geological Society and the Gulf Coast Scouts Association in an effort to standardize the names of all fields and areas on the Gulf Coast and in Southwest Texas. The list is expected to be adopted uniformly by all companies to eliminate the confusion which has existed because of the fact that a number of fields and areas have been known by several names.

Selection of names for Southwest Texas is being sponsored by the San Antonio Geological Society while the work in the Gulf Coast has been by the Houston Geological Society and the Gulf Coast Scouts Association. These organisations, through committees, have been busy for several months in choosing appropriate names in their respective districts. The Houston Geological Society committee is composed of Henry C. Cortez, Vacuum Oil Co., chairman; John C. Miller, The Texas Company; L. P. Teas, Humble Oil & Refining Co., and Paul Weaver, Gulf Production Co. The San Antonio Society is represented by Phil F. Martyn, Houston Oil Co., Beeville, chairman; Joe M. Dawson, Gulf Production Co., San Antonio, and Olin G. Bell, Humble Oil & Refining Co., Laredo. The Scouts committee consists of George E. Robinson, Pure Oil Co., and G. C. Francisco, Jr., Sun Oil Co.

These will be standing committees whose duties will be to represent their respective organizations in the selection of appropriate, uniform names for all new fields and areas which may be discovered in the future.

District Division Line

To eliminate confusion in territories, the Houston Geological Society and the San Antonio Geological Society have approved a definite division line, west of which the San Antonio society will have supervision in the choosing of field names and east of which will be under the jurisdiction of the Houston society. The latter territory will include coastal Louisiana as well as that of Texas.

This line runs from the Gulf of Mexico northward along the west line of the following counties: Matagorda, Wharton, Colorado, Austin, Washington, Brazos and Robertson. So far there are no definite northern limits of either territory but the matter of uniform naming of fields also has been recommended to the Dallas and the Shreveport geological societies and the selection of division lines will be left to those concerned.

In the standardizing on names for unproved areas, the Houston Geological Society states it is recognizing these only as prospects and is not committing the society members that these are future fields. The uniform names have been chosen as these prospects, whether they ever are drilled, and must be referred to at various times by all companies. The list of Gulf Coast fields and areas by counties (in Texas) and parishes (in Louisiana), showing the approved name and the various other names, if any, by which the areas have been known follows:

GULF COAST

TEXAS

Proven Domes or Oil Fields

Recommended name—	County	Alternate used names
Raccoon Bend	Austin	Ives Creek
Allen	Brazoria	
Clemens	Brazoria	Hinkle's Ferry
Damon Mound	Brazoria	
Danbury	Brazoria	
Bryan Heights	Brazoria	Freeport
Hoskins Mound	Brazoria	
Stratton Ridge	Brazoria	
West Columbia	Brazoria	
Gyp Hill	Brooks	Falfurrias
Barbers Hill	Chambers	Mount Belvieu
Lost Lake	Chambers	Cove
Palangana	Duval	
Piedras Pintas	Duval	
Big Creek	Ford Bend	
Blue Ridge	Ford Bend	
Sugarland	Ford Bend	DeWalt-Cockburn
Rabb's Ridge	Ford Bend	Thompson—Clear Lake—Gubbels
Long Point	Ford Bend	Pathfinder
Nash	Ford Bend	
Orchard	Ford Bend	Moore's Field
High Island	Galveston	
Batson	Hardin	
Saratoga	Hardin	
Sour Lake	Hardin	
Goose Creek	Harris	
Hockley	Harris	
Humble	Harris	
Mykawa	Harris	
Pierce Junction	Harris	
Edna	Jackson	
Big Hill—Jefferson	Jefferson	
Fannett	Jefferson	
Spindletop	Jefferson	
Davis Hill	Liberty	
Esperson	Liberty	Sheeks
Hankamer	Liberty	
Hull	Liberty	
Moss Bluff	Liberty	
North Dayton	Liberty	
South Liberty	Liberty	Liberty—South Dayton
Big Hill-Matagorda	Matagorda	Gulf
Hawkinsville	Matagorda	
Markham	Matagorda	Clemville
Orange	Orange	Cow Bayou—Terry
Port Neches	Orange	Mansfield Ferry—Bessie Heights
Brookshire	Waller-Austin	San Felipe—Sealy
Brenham	Washington	Mill Creek
Clay Creek	Washington	Gay Hill—Ferguson—Somerville
Boling	Wharton-Fort Bend	

Prospects (Condemned, Not Condemned, Drilling, to Be Drilled, or Probably Never Will Be Drilled

Recommended name—	County	Alternate used names
Maupin	Brooks	Alta Verde
Pearland	Brazoria	
Beasley	Fort Bend	
Clodine	Fort Bend	
Needville	Fort Bend	
Pilant Lake	Fort Bend	
Smith Point	Chambers	
Jackson Ranch	Chambers	Salt Cedars—Oyster Bayou
Coon Ranch	Galveston	Green Lake
Ferguson's Crossing	Grimes	Carlos
Ariola	Hardin	
Cedar Bayou	Harris	Ulrich—Highland
Deer Park	Harris	Strang
Genoa	Harris	
Satsuma	Harris	
Cheek	Jefferson	Lovell's Lake
Devers	Liberty	
Citrus Grove	Matagorda	
Shepherds Mott	Matagorda	
Nursery	Victoria	
Telferner	Victoria	Beck

LOUISIANA

Proven Domes or Oil Fields

Recommended name—	Parish	Alternate used names
Jennings	Acadia	Evangeline
Sorrento	Ascension	McElroy
Napoleonville	Assumption	
Edgerly	Calcasieu	
Iowa	Calcasieu	Bayou Arsene
Lockport	Calcasieu	
Starks	Calcasieu	
Sulphur	Calcasieu	
Vinton	Calcasieu	Ged
Black Bayou	Cameron	
Calcasieu Lake	Cameron	
Cameron Meadows	Cameron	Johnson's Bayou
East Hackberry	Cameron	Kelso Bayou
Hackberry	Cameron	
Sweet Lake	Cameron	
Pine Prairie	Evangeline	Mamou
Avery Island	Iberia	Petit Anse—Marsh's Island
New Iberia	Iberia	Little Bayou
Jefferson's Island	Iberia	Lake Peigneur
Fausse Pointe	Iberia	Loreauville—Eagle Point
Vermilion Bay	Iberia	
Weeks Island	Iberia	Grand Cote
Bayou Blue	Iberville	Bayou Bleu
Choctaw	Iberville	Grosse Tete
Bayou Des Glaise	Iberville	Whiskey Bay
White Castle	Iberville	Square League
Welsh	Jeff Davis	
Chacahoula	La Fourche	Lutcher—Thibodeaux
Leesville	La Fourche	Bayou La Fourche
Garden Island Bay	Plaquemine	
Lake Washington	Plaquemine	Grand Ecaille—Cockrell—Bayou Long
Venice	Plaquemine	Rose—Spanish Pass—Tiger Pass
Port Barre	St. Landry	
Anse La Butte	St. Martin	
Bayou Boullion	St. Martin	Bayou La Rompe
Section 28	St. Martin	Hager
Bell Isle	St. Mary	
Cote Blanche	St. Mary	
Bay St. Elaine	Terrebonne	Bay Coon Roads
Caillou Island	Terrebonne	
Dog Lake	Terrebonne	
East Bay Junop	Terrebonne	Bayou de Large
Four Isle	Terrebonne	
Houma	Terrebonne	Montagu—Lirette
Lake Barre	Terrebonne	
Lake Pelto	Terrebonne	
Gueydan	Vermillion	

Prospects (Condemned, Not Condemned, Drilling, to Be Drilled, or Probably Never Will Be Drilled

Recommended name—	Parish	Alternate used names
Bosco	Acadia	
Egan	Acadia	
Darrow	Ascension-Assumption	
Hayes	Calcasieu	
Johnson's Bayou	Cameron	This prospect, 8 miles SW Cameron, sometimes called Johnson's Bayou
Spanish Lake	Iberia	
Barataria	Jefferson	Lafitte
Roanoke	Jeff Davis	
Carenero	Lafayette	
Bay Marchand	La Fourche	Wisner
Lake Hermitage	Plaquemine	
Gecho	St. Martin	
St. Martinville	St. Martin	
Spanish Lake	St. Martin	T. T.
Franklin	St. Mary	Charenton
Patterson	St. Mary	
Wax Lake	St. Mary	
Pointe au Fer	Terrebonne	Four League Bay
Abbeville	Vermillion	
Mallard Bay	Vermillion	

SOUTHWEST TEXAS

Recommended name—	County	Alternate used names
Adams	Central Medina	Henderson Holden
Agua Dulce	W. central Nueces	
Albercas	Southeast Webb	
Alta Mesa (prospect)	Southwest Brooks	Ed East, Jones
Alta Verde (prospect)	Northwest Brooks	Maupin
Alta Vista	South central Bexar	
Alworth	South Zapata and Jim Hogg	
Amargosa (prospect)	Northwest Jim Wells	Carsill McGill
Aransas	North central San Patricio	Welder Ranch
Aviator	Southeast Webb	Andrews
Branyon	Central Caldwell	
Buchanan	Central Caldwell	Brown, Brown-Crude
Cabeza Creek	Northwest Goliad	Pettus Ranch
		So. Crude
Calliham	Northeast McMullen	
Carolina-Texas	East central Webb	
Chacon Lake (prospect)	East central Medina	
Chapman	East Williamson	Abbott
Charco-Redondo	East central Zapata	
Chittim	North central Maverick	Rycade
Cole	East Webb and S. W. Duval	
Cooksey	Southeast Bexar	
Cosden	North Bee	
Cow Hill	North Zavala	West-Pryor, La Pryor
Crowther	Northeast McMullen	Possum Hills
Cuellar	East central Zapata	Jenninga, Killam
Dale	Eastern Caldwell	
Darst Creek	Central Guadalupe	
Driscoll	South central Duval	
Eckert	Eastern Bexar	Dobrowolski
Edna	Northwest Jackson	Horse Shoe Lake
Escobas	North central Zapata	Jennings, Muckelroy
Friendship	West Bee	Simms, Holzmark
Gas Ridge	West central Bexar	
Government Wells	Northwest Duval	Schoolfield-O'Bryne, Duval County Oil Field
Grayburg (prospect)	Western Bee	Mineral
Gyp Hill (prospect)	Northeast Brooks	Falfurrias
Henne-Winch-Fariss	Northwest Jim Hogg	Thompsonville
Hord's Creek	Western Goliad	Kauffman, Zoch
Ina	Central Medina	
Jennings	Northeast Zapata	Zapata County Field
Kingsville	Central Kleberg	
Kohler	West central Duval	Humble
Laremore	West Caldwell	Roxana, Jolley
Leaseholders	Northeast Webb	
Lobo	North central Live Oak	
Los Olmos	Southern Starr	
Love Ranch (prospect)	Southwest Kerr	
Lowe Ranch	West central McMullen	
Lucas	Southeast Live Oak	Cartwright
Luling	Southwest Caldwell	Old Luling
Lytton Springs	North Caldwell	
Lytton Springs Townsite	North Caldwell	
Manford	Northeast Guadalupe	

(Table continued on next page)

SOUTHWEST TEXAS

Recommended name—	County	Alternate used names
Martinez	East Zapata	Escobas. Jennings. Muckelroy
Mathis	West San Patricio	Worth
McFaddin	South Victoria	Marianna. Lion Victoria Co. Field
Minerva-Rockdale	N. E. Refugio-central Milam	Minerva
Mirando Valley	Northeast Zapata	
Mirando City	Webb	Ojuelos, Mid-Ojuelos, Wolcott Schott, Mirando City
Mission	Central Bexar	Palo Alto
Normanna	Northwest Bee	Nichols
North Pettus	Northeast Bee	Morgan. McKinney
Nursery (prospect)	North central Victoria	
Oakville	North central Live Oak	
Ottine (prospect)	Northwest Gonzales	Empire. Sullivan Norwood
Palangana	East Duval	
Palo Blanco (prospect)	Northwest Brooks	Wormser
Pettus	Northwest Bee	Pettus Townsite. Damac Extens'n.
Piedras Pintas	East Duval	Noleda
Randado	Northwest Jim Hogg	
Refugio	Central Refugio	
Reiser	Webb	
Roma	Southwest Starr	
Salt Flat	South Caldwell	Bruner
Sandia	Northeast Jim Wells	Wade. Larcro
Saxet	Northeast Nueces	
Schimmel-Batts	West Bastrop	Ferguson
Simmons	West central Live Oak	Simmons City
Slick	S. W. DeWitt-N. W. Goliad	Nordheim. Weesatche
Somerset	S. W. Bexar-N. E. Atascosa	
S. R. C.	Northwest Duval	
Stratton (prospect)	Southwest Nueces	
Taylor Pool	Western Medina	Hondo
Telferner (prospect)	Northeast Victoria	Beck Ranch
Thrall	Eastern Williamson	
Three Rivers	North central Live Oak	
West Cole	Southeast Webb	Magnolia-Cole
White	North Milam	Service
White Point	South central San Patricio	
Yost	West Bastrop	Cedar Creek
Yturri-Southton	South central Bexar	Southton

ORGANIZE COMPANY TO HANDLE CRACKING UNIT

NEW YORK, Jan. 23.—Crack Oil Gesellschaft has been registered in Berlin to develop the Carbunol cracking process, a recently developed German method which hitherto has been operated only on an experimental scale. The new company, it is stated, will acquire considerable oil acreage in the Hanover Field, and will refine the crude in a cracking installation erected by the Borgis company in Berlin. The cracking plant, which will cost approximately 3,000,000 marks, will be built in two stages.

Until the company develops an adequate supply of German crude, the Borsig plant will operate the initial unit on residual oils purchased in the open market.

REDUCE PRICES ON OKLAHOMA LUBRICANTS

(Continued from Page 12)

country have suffered due to the expansion of refineries in foreign countries.

The lubricating oil situation is not without its favorable features. While the domestic and export demand has shown a large decline there has also been a reduction in production. Total production in November, 1931, was 10.6 per cent less than the same month of 1930 and for the 11-month period, the decline in production was 22.2 per cent. An excess of shipments over production brought a 10.6 per cent decline in stocks for the first 11 months of 1931. This is in contrast to the situation in 1930 when stocks increased over 30 per cent.

Gasoline and Naphtha

U. S. Motor gasoline of no octane rating was slow in Oklahoma at a price range of 3 to 3¼ cents. Resale material was available as low as 2¾ cents. Although contract movements were reported fair, open market trading was duller than it was early in the month. Refiners in a position to guarantee an octane rating of 57 to 65 inclusive had more sales for U. S. Motor at 3¼ to 3½ cents than did those selling the low octane material for 3 cents. A large part of the U. S. Motor gasoline sold without octane rating is retailed as a third grade product. This market is now so low at most points that there is no profit to the jobber and for that reason many jobbers are giving more attention to their regular grade and they are willing to give at least one-fourth cent more for the higher octane material. This is an important development which points to the increasing importance of octane rating in gasoline specifications. Skimming plants generally and some of the cracking processes do not manufacture a gasoline coming within the 57-65 octane rating.

Prices on the higher gravity gasolines are the same as last week. As in the case of the U. S. Motor, trading was dull although no distress material made its appearance on the market during the week.

Natural Gasolines

The 26-70 grade of natural gasoline was generally quoted at 2¼ cents on Monday and Tuesday with little trading. Prices were one-eighth cent lower in Texas. Larger manufacturers continue to store a part of their output and there has been no disposition to force sales with price concessions. The large order for stabilized material previously mentioned is expected to prevent any price decline over the remainder of the month.

Kerosene

No export orders for kerosene were reported during the week. Most refiners have sufficient orders to take care of their output over the remainder of the month and prices were firm on Monday and Tuesday at last week's levels. Sales of 41-43 water white at 2½ cents were reported but this material was either high endpoint or high sulphur and specification grades continued to move to the trade at 2⅝ cents. The 42-44 grade was one-eighth cent higher.

Tractor Fuels and Furnace Oils

Contract movement of furnace oil and tractor fuel was steady over the week with fewer inquiries for spot shipment. The lowest gravity furnace oil is now bringing a low of 1¾ cents with price ranges up to 2¼ cents for a high gravity prime white grade. Tractor fuels start at a low of 2 cents and range up to 2⅜ cents.

Fuel Oil and Gas Oil

Buyers and sellers of fuel oil and gas oil were in agreement the first of the week that prices were unchanged. The closing of railroad contracts with railroads has helped the position of several refiners and they will have little if any fuel oil to offer on the spot market. U.G.I. gas oil buyers are not active and middle western refiners are apparently getting a large part of the business for delivery to consumers in that territory. The ordinary grades of fuel oils range from 22½ to 45 cents depending on gravity and viscosity with high cold test material available as low as 20 cents for gravities up to 24. Panhandle gas oil has sold as low as 1 cent, basis Group 3, and high cold test Oklahoma City gas oil is quoted at 1¼ cents.

Lubricants

The largest reduction in neutral oils was in the higher viscosity grades amounting to one-half cent in most cases. Reductions over the past years generally have been more in the higher viscosities than in the lower viscosity grades and this has materially reduced the price differentials between the grades. This is due in part to the reductions in bright stock prices. When bright stock prices were relatively high greater quantities of the higher viscosity neutrals were used in compounding. The same price changes were made in the 15 to 30 cold test neutrals as in the zero to 10 grades.

Prices on the 150-160 bright stocks range from a low of 15 cents for a high cold test E grade to 16½ cents for the low cold test D grade. The 190 grade is quoted by one Oklahoma manufacturer at 18½ cents with an E grade available at 17½ cents. The new prices on the 100 D grade are 14½ and 15 cents. Sellers are hopeful that the lower prices will stimulate sales.

The price ranges on steam refined stock which range from 3½ to 5 cents were not changed. Treated stocks range up to 7½ cents.

COLLOID CHEMISTRY AND CRUDE OIL REFINING

(Continued from Page 22)

bauxite. The degree of fineness of the adsorbent is an important factor in treating.

One of the most successful processes used in treating gasoline generally, including some classes of cracked distillates, is the Gray vapor phase treating process, which consists in passing the vapors to be treated through fuller's earth. The equipment used in this system is either a single fuller's earth of so-called "clay" tower followed by a knockout box or bubble tower, or combinations of these.

The vapors from the still enter the top of the tower and pass through the "clay." The vapors leaving the bottom of the tower may then pass through a "knockout" box, the main purpose of which is to remove any of the entrained liquids or polymers. The vapors leaving the "knockout" box pass through a condenser coil and then to a storage tank. The best results have been obtained by passing the vapors through a small bubble tower after leaving the clay tower. In passing through the clay, the undesirable compounds are polymerized by the action of the fuller's earth.

In some cases a small amount of steam is used continuously in the top of the tower, while in other operations the clay is steamed heavily periodically as found necessary, or the two operations may be combined. It is general practice to spray a small amount of gasoline into the top of the tower. This is useful in that it assists in washing the clay free of polymers.

With this vapor phase treating process there is very little, if any, reduction in the sulphur content of the gasoline. The gum content in the finished gasoline has a tendency to increase as the gasoline treated per ton of clay increases.

Adsorptive materials may be used both in the liquid and vapor phase, either alone or in conjunction with other substances. There are many patents issued on the application of adsorbents to refining.

Aside from the purely adsorptive methods of treatment, polymerizing agents may be used, such as the salts of heavy metals, either as such or in solution, for treating the oil in the liquid or vapor phase.

OIL SECURITIES FIRM DURING PAST WEEK

(Continued from Page 160)

three months of 1931. It is approximately $4 a share more than the prevailing market price.

Cities Service

Cities Service Co. reports net to common stocks and reserves amounting to $15,408,224 for the 12 months ended December 31, 1931, compared with $41,614,216 for the preceding 12 months. Gross earnings were $37,142,363, against $60,817,831, while expenses totaled $2,247,445, against $2,510,018. Interest and discount on debentures totaled $12,125,111, against $9,332,058.

Prairie Proxies

Changes in the petroleum situation in recent years have brought about a definite trend toward integration to effect operating economies, says W. S. Fitzpatrick, chairman of the board of Prairie Oil & Gas Co., in a letter to stockholders asking for proxies to vote the proposed merger of the company with Sinclair Consolidated Oil Corp. Purchases of crude oil by Prairie, he said, had declined from 77,896,049 bbls. in 1929 to 24,856,804 bbls. in 1931, or approximately 65 per cent.

"The business of your company, being largely the production, purchase and sale of crude oil," Mr. Fitzpatrick writes, "has suffered in consequence of these changes in the industry. The development of crude oil production by refining companies, formerly customers of your company, has resulted in a marked decline in the number of customers of your company and in the volume of its sales. A consolidation of the properties of your company with those of the Sinclair company and the Prairie Pipe Line Co. is the most logical one from your standpoint."

Pure Oil Co.

Pure Oil Co. will show a profit on operations for the fiscal year ending March 31, next, according to reports in financial circles, and directors of the company are expected to continue dividends on the preferred at their meeting next month. Earnings by the company during the closing two months of 1931 showed a decided turn for the better, it is reported, and the outlook for the first quarter of 1932 is favorable.

Capital expenditures by the company during the current fiscal year, it is reported, will amount to approximately $500,000 less than the budgeted amount of $4,500,000. Pure Oil expended $17,500,000 in development work in 1930, marking the virtual completion of the extensive integration program initiated in 1926.

PUMP INDUSTRY FEELS LOSS OF W. D. POMEROY

The sudden death of William D. Pomeroy, aged 57, general manager, vice president and director of Goulds Pumps, Inc., January 6, cast a deep sorrow over the entire pump industry. He had been for more than a year in ill health, having been a patient for the past several months at Clifton Springs Sanitarium. He was the victim of a nervous breakdown and severe heart attacks.

Mr. Pomeroy was born in Utica, where he received his early education, graduating in 1895 from Cornell University in electrical engineering. At Cornell he was honored by membership in Sigma Phi fraternity. From 1901 to 1907 he was employed with the Bullock Electric Co. of Cincinnati, a subsidiary of the Allis-Chalmers Manufacturing Co. With that company he advanced from draftsman to works manager.

In 1907 Mr. Pomeroy went to Seneca Falls as works manager of the Goulds Manufacturing Co. In 1915 he was made general manager and for several years past he has occupied that position as well as having been elected a vice president and director of the company.

A year ago Mr. Pomeroy was awarded the Melville Medal by the A.S.M.E. for a paper, which he prepared jointly with Prof. Herman Diedrichs of Cornell University, on "The Occurrence and Elimination of Surges or Oscillating Pressures in Discharge Lines from Reciprocating Pumps." He gained widespread fame in engineering and manufacturing circles, and recently was elected to membership in Sigma Xi, national honorary engineering society.

Mr. Pomeroy took an active part in civic affairs and his loss will be felt not only by his associates in Goulds Pumps, Inc., and the community in which he spent the greater part of his life, but by the host of friends he has made in the pump industry and in the professional engineering societies.

BAKER TO DRILL TEST NORTHWEST OF HOBBS

The Baker Oil Co. has made location for a test 15 miles northwest of the Hobbs Pool, in Lea County, New Mexico, Section 16-13-33, which will be watched with interest by many major oil companies which have leases in that area. The location is 12 miles from Lovington, the nearest production. F. C. Kiskaddon, manager of the Aladdin Drilling Co., which is to put down the test, plans to move in early in February. The contract requires drilling to a depth of 5,000 feet unless oil or gas in commercial quantity is encountered before that. Among oil companies which have leases near the Baker location are the Humble, Shell, Texas, Standard of California, Gypsy, Pure, Midwest, Magnolia and Indian Territory Illuminating Oil Co.

EAST TEXAS CONTROL WILL HOLD BEATY SAYS

NEW YORK, Jan. 23.—Hope that the oil industry of the United States may find itself "fairly well in balance" by April was expressed in a statement issued by Amos L. Beaty, president of the American Petroleum Institute. Refinery and production reports received at headquarters of the institute are reviewed by Mr. Beaty in the statement, along with the production situation in East Texas where martial law control has been attacked in Federal Court. Notwithstanding the belief that the decision of the three-judge court may be against the validity of martial law, Mr. Beaty believes that orderly production will continue in the great East Texas Field. The statement follows:

"Our reports indicate that from December 19, 1931, to January 16, 1932, the daily average of crude oil production of the United States declined from 2,430,300 to 2,193,450 bbls., and that withdrawals from storage averaged more than 100,000 bbls. daily. Such withdrawals at this time of the year are unusual, and they constitute a favorable factor. Between the same dates, gasoline stocks at refineries and terminals increased 5,000,000 bbls. as against a normal seasonal increase of from 2,500,000 to 3,000,000 bbls. Last week, however, the upward trend of gasoline stocks underwent a favorable change. At refineries and terminals the increase was only 666,000 bbls., as against a normal seasonal increase of, say, 800,000 bbls. It is apparent, of course, that as refinery runs decline less oil will be run from storage, this on the assumption that production and imports remain level.

"Territory east of California is taking the lead in improvement. In this territory refinery runs and gasoline production are declining in successive weeks, and I am hopeful that by the first of April we may be fairly well in balance.

"Present prices of refined products do not justify the prices being paid for crude, but there is evidence of improvement in refinery prices for gasoline in the Mid-Continent area which may be regarded as significant.

"The most depressing influence at this time is the uncertainty of the East Texas situation. The trade is not certain that curtailment and proration will continue. It is generally believed that the decision of the three-judge Federal Court soon to be rendered will be against the validity of martial law. But it should be remembered that an appeal will lie. The case will undoubtedly be taken to the Supreme Court, where it has been ruled many times that the courts can not inquire into the facts or motives which actuate the governor of a state to declare and enforce martial law when, as in this case, the basis of the declaration is threatened insurrection. Moreover, if martial law were suspended, and if violence and insurrection did not result and thereby call for a resumption of martial law, the Texas Railroad Commission could enforce proration in East Texas, just as it now enforces it in other Texas fields. I believe East Texas will be controlled."

GOVERNMENT CONTRACTS FOR REFINED PRODUCTS

NEW YORK, Jan. 23.—A number of important contracts for refined petroleum products have been awarded by government agencies since the first of the year, the most important being a contract for 3,819,000 gallons of aviation gasoline, covering Army Air Corps requirements from January 1 to July 1, which went to Phillips Petroleum Co. Most of the gasoline covered in this contract is high grade aviation gas, with an octane number of 87 at 375° F. The gasoline which the company will supply is 100 per cent natural gasoline, with tetraethyl lead added.

Other contracts awarded were as follows:

Keystone Oil Refining Co., Detroit, 23,000 gallons of lubricating oil at 24.82 cents per gallon, 17,000 gallons at 23.37 cents and 16,500 gallons at 23.37 cents, all for the Army Air Corps, delivery at Wright Field, Ohio.

Kendall Refining Co., Bradford, Pa., 8,000 gallons of lub oil at 25 cents, 14,000 gallons at 20 cents, 29,500 gallons at 25 cents, 20,000 gallons at 25 cents, 2,000 gallons at 25 cents and 15,000 gallons at 25 cents, all for the Army Air Corps for delivery at Wright Field, Ohio.

Atlantic Refining Co., Philadelphia, fuel oil, $1,904.80, for the U. S. Engineer, Savannah, Ga.

The Texas Company, 20,000 bbls. fuel oil, for delivery to the U. S. Engineer at Jacksonville, at 65 cents per barrel.

Standard Oil Co. of New York, 70,000 bbls. of Bunker A fuel oil, at 85 cents per barrel, for delivery to the U. S. Engineer, First District, New York.

Sinclair Refining Co., 100,000 gallons of fuel oil, at 3¾ cents per gallon, for delivery to the U. S. Engineer at Jacksonville, Fla.

The Texas Company, 275,000 gallons of fuel oil, $6,220.24, for delivery to the U. S. Engineer at Wilmington, N. C.

Tide Water Oil Sales Corp, 4,004 gallons of gasoline, 6.8 cents; 4,800 gallons, 6.8 cents; 2,906 gallons, 6.8 cents, and 35,000 gallons gasoline, 6.8 cents, for delivery to the Army Quartermaster, Washington.

LEGAL

Sale of Oil and Gas Lease, Department of the Interior, Monroe, Louisiana. Notice is hereby given that the following described land in one unit in the known geologic structure of the Monroe Gas Field, Louisiana, is offered for lease under Sec. 17 of the act of February 25, 1920 (41 Stat. 437), at the customary sliding scale of 12½% to 33⅓% of the quantity or value of the oil produced, of 12½% to 16⅔% of the value of the gas produced, and of 16⅔% of the value of the natural gas gasoline produced, in accordance with the royalty schedule in the regular lease form, and the rental as required by Sec. 17 of the said act: T. 19 N., R. 5 E., Sec. 10, SE¼ SE¼, 39.82 acres; T. 20 N., R. 5 E., Sec. 34, SE¼ SE¼, 40.07 acres; Louisiana Meridian, Louisiana. The lessee will be required to proceed with reasonable diligence to install standard or other efficient drilling outfits and equipment and within three months of delivery of the executed lease to commence drilling one well on each tract of the leasehold. The drilling of each well shall be continued with diligence to production, and thereafter produced, or to a point where the well is demonstrated unsuccessful; and if any well be demonstrated unsuccessful additional wells shall be drilled in lieu thereof until one productive well shall be drilled on each tract or the tract proved barren. Neither more nor less than one productive well shall be drilled on any tract without consent in writing first obtained from the lessor. Beginning with the fourth calendar month after delivery of the lease and continuing until production on nearby lands shall have been fairly offset by production on the leasehold, the lessee shall pay a sum of each tract estimated to reimburse the United States for current loss of royalty therefrom through drainage, the amount of such reimbursement to be fixed monthly by the supervisor of oil and gas operations, subject to the right of appeal to the Secretary, provided that during the last nine months of the first year of the lease such sum is hereby fixed at $25.00 per tract per month. Said lease will be offered for sale by public auction at the west entrance to the Post Office Building, Monroe, Louisiana, at 10 A. M. on January 30, 1932. The successful qualified bidder must deposit on the date of sale with the officer in charge of the sale certified check on a solvent bank, or cash, for one-fifth of the amount bid by him, and file the showing of qualifications to receive a lease required by Section 15 of said regulations. Bidders are warned against violations of the provisions of Section 59, U. S. Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any or all bids in the discretion of the Secretary of the Interior. James W. Neal, Officer in Charge.

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1-28-32

Personal Paragraphs About Oil Men

C. R. Cox, of Wichita Falls, Tex., has moved to San Antonio, Tex.

* * *

R. W. Freeman, of Peoria, Ill., has taken charge of the Champlin Refining Company's retail outlets in Lincoln, Neb.

* * *

Wayne Edminster, senior in engineering, Agricultural and Mechanical College, Stillwater, Okla., was in Tulsa this week.

* * *

Richard Organ has become assistant general counsel of the Northern Natural Gas Company with headquarters at Omaha, Neb.

* * *

George Phillips is now in charge of the Kilgore office of the Texas Railroad Commission. He formerly lived at Fort Worth, Tex.

* * *

E. T. Knight, of the Atlantic Refining Company, Philadelphia, Pa., has been appointed a member of the American Petroleum Institute's statistical advisory committee.

* * *

William T. Nightingale, geologist for the Ohio Oil Company, was one of the speakers at the annual meeting of the University of Washington's mining institute at Seattle.

* * *

R. H. Durward is being transferred by the Plymouth Oil Company from Bartlesville, Okla., to San Antonio, Tex., where the company has opened offices in the Milam Building.

* * *

Merle P. Long, of the Ponca City offices of Wentz Oil Corporation, has gone to San Benito, Tex., to manage the division there until a successor to the late J. E. Sanders is named.

* * *

K. D. Pardee, district superintendent of the Wyoming-Montana district, The Texas Company, with headquarters in Billings, Mont., was in Casper, Wyo., on business recently.

* * *

William A. Waid, chief inspector of the oil division of the Osage Indian Agency, at Pawhuska, Okla., has been officiating at the plugging of a number of wells just over the Osage County line near Tulsa.

* * *

E. A. Weyman, division geologist with the Amerada Petroleum Corporation at Wichita, Kans., and president of the Kansas Geological Society, has been conferring with the officials of the company in Tulsa.

* * *

Richard Airey, president of Asiatic Petroleum Company, accompanied by Mrs. Airey, has sailed on the "Italia" for a West Indies cruise. Mr. Airey will visit Curacao, where Royal Dutch-Shell has a large refinery plant.

* * *

Ray O. Armstrong, who has been superintendent of operations for the Imperial Oil Company in the Turner Valley district in Alberta for several years, has recently been transferred to Colombia, where he will have a similar position.

* * *

J. F. Owens, Oklahoma City, Okla., president, National Electric Light Association; Kurwin R. Boyes, New York, secretary, American Gas Association, and T. J. Strickler, Kansas City, chairman of the natural gas department, American Gas Association, will address the fourteenth annual convention of the Oklahoma Utilities Association at Tulsa, March 8 and 9.

* * *

Wallace H. Collins, production engineer, the Shell Petroleum Corporation, Tulsa, has been instructed to report to the technical department of the Dutch-Shell Oil Company, The Hague, Holland, for three or four months of training and instruction. He will leave Tulsa January 30 and sail for Southhampton, England, on the S. S. Hamburg, February 4 and from England proceed to Holland.

N. A. Newton, research engineer for the National Transit Pump & Machine Company, Oil City, Pa., was in Houston, Tex., recently on business.

* * *

J. S. Abercrombie and Dan Harrison, independent operators, Houston, Tex., spent several days on a hunting trip in the lower Gulf Coast counties.

* * *

T. E. Guillory, Tyler, Tex., consulting engineer, who has been working in East Texas for the past six months, spent several days in Houston, Tex.

* * *

W. Screeton, sales manager of Shell Marketing Company since 1919, and who has been associated with various oil concerns in England for 35 years, has retired.

* * *

Latham Clark, an American engineer, has been appointed one of the committee of six recently formed to administer the government gasoline monopoly in Uruguay.

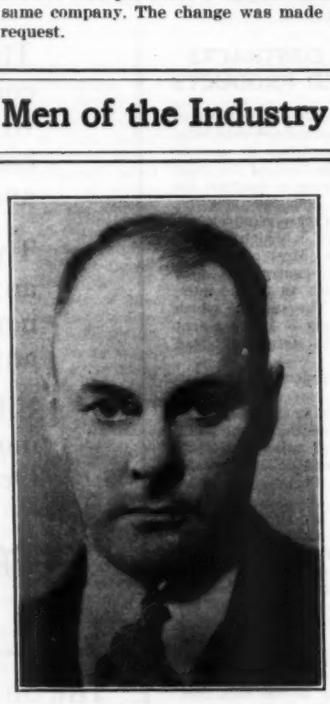
* * *

Ross M. Stuntz, production engineer of the Empire Companies, and who helped to drill a wildcat on Prince Edward Island, in Canada, told members of the Bartlesville Kiwanis Club about his experiences.

* * *

N. R. Grimshaw, Standard Oil Company (Indiana), Chicago, has been appointed member of the American Petroleum Institute's central committee on automotive transportation to succeed Amos Ball, of the same company. The change was made at Mr. Ball's request.

Men of the Industry



Donald G. Coombs

Donald G. Coombs, widely known in the petroleum industry, has been appointed manager of the operating department of the Shell Petroleum Corporation, with headquarters in St. Louis, Mo., being transferred from New York where he was associated with Shell Eastern, Inc., in a similar capacity.

Mr. Coombs joined the Shell Oil Company, another of the Shell group, in California in 1921. He served in the Los Angeles and Seattle offices and later was sent to Honolulu to supervise the construction of a terminal. In 1929 he went to Shell Eastern as operations manager. Mr. Coombs was born in Burlington, Wis., and attended University of Washington.

M. V. Ambler, chief engineer to the motor department of Shell-Mex, Ltd., since 1920, recently retired.

* * *

Hugh McClelland, a consulting geologist of Tulsa, has moved to Hutchinson, Kans., to watch the western Kansas oil play.

* * *

Herman Heep, independent oil operator, Houston, Tex., has returned from a hunting trip in Starr County, Southwest Texas.

* * *

Fred Ossenbeck, of Tulsa, is arranging to move to San Antonio, Tex., and will operate in Southwest Texas the coming year.

* * *

Colin E. Spearing, M.A., of the chemical staff of the Anglo-Persian Oil Company, Ltd., has been elected to a Fellowship of the Institute of Chemistry.

* * *

C. J. Hare, chief geologist for the Ohio Oil Company, with headquarters in Denver, Colo., has been spending some time at his company's offices at Casper, Wyo.

* * *

A. J. Colville, drilling superintendent of the Anglo-Persian Oil Company, Ltd., is visiting California in the course of a study of modern oil field practice in the United States.

* * *

William S. Lee, of Charlotte, N. C., has been elected president of the American Engineering Council, succeeding Carl E. Grunsky, of San Francisco, Calif., whose term expired.

* * *

Lee R. Saunders, formerly vice president and general manager, has been elected president and chairman of the board of directors of Petroleum Products, Inc., of Kansas City, Mo.

* * *

H. D. Patridge, manager of the purchasing department of the Indian Territory Illuminating Oil Company, Bartlesville, Okla., has returned from an inspection trip to Fort Morgan, Colo.

* * *

Benjamin H. Stephens, vice president and general manager of the Magnolia Petroleum Company, has been elected chairman of the board of directors of the Mercantile Bank & Trust Company, of Dallas, Tex.

* * *

Amos L. Beaty, president of the American Petroleum Institute, has accepted an invitation to deliver the principal address at the 1932 annual dinner of the California Oil and Gas Association early in March.

* * *

J. J. Stadtherr, chemist at the Coffeyville, Kans., plant of Sinclair Refining Company, delivered an address, "Disposal of Oil Refinery Waste," before the southeast Kansas section of the American Chemical Society at Joplin, Mo.

* * *

H. G. Texter, of Tulsa, sales engineer of Spang, Chalfant & Company, Inc., is absolutely convinced the year 1932 has had an auspicious start. He and Mrs. Texter are the proud parents of a baby girl born on January 20. They have two other children which they adopted.

* * *

Thomas L. Allen, who has been in Venezuela in charge of seismograph crews for the International Petroleum & Engineering Corporation of San Antonio, Tex., is back in the United States. For the present he is staying in Houston, Tex. The work in Venezuela was for the Sinclair interests.

* * *

Ernest L. Hughes, head of the Hughes Oil Company, of Chicago, and one of the four original stockholders of the Old Dutch Refining Company, Muskegon, Mich., has resigned from the presidency of the refining concern, it was revealed here today. Mr. Hughes had served in this capacity for nearly a year succeeding John Borden, Chicago sportsman and explorer, who was named chairman of the board.

Oil Industry Equipment and Supplies

ALUMAWELD AN EASY AND SURE OIL FIELD SOLDER

An aluminum and all-metal solder that promises to be used extensively for maintenance work in the petroleum industry

has been announced by the Allied Research Laboratories of Glendale, Calif. The solder is called Alumaweld, and as the name implies, fuses or welds with the metal to form a single piece.

Alumaweld is designed to repair aluminum, pot metal, die castings, cast iron and stool quickly and lastingly. It will repair the cylinder head or crank case of an automobile without tearing down the car. It will repair pipe systems without tearing out a section just by equalizing the pressure. It is applied to aluminum, pot metal and die castings with an ordinary soldering iron or blowtorch. The solder melts at a low temperature, but once melted it requires a much higher temperature to melt it again. This makes it possible to withstand any ordinary heat.

Tests of this solder over a period of years are reported to have been successful in every case. Alumaweld, according to the manufacturers, is 10 times as strong as ordinary solder, quite ductile, and will take a polish over which chromium or any other plating can be applied. It will not corrode under ordinary circumstances and cannot rust.

MANNING WITH HALLIBURTON

The Halliburton Oil Well Cementing Co. has made an arrangement with M. (Bink) Manning to act as special representative in connection with the Halliburton Full Hole Cementer and Howco Lining for Screens or Perforated Liner. Mr. Manning and his brother, the late S. E. Manning, originally developed full hole cementing devices and have successfully used 300 devices in wells of various major and independent operators in the Gulf Coast and East Texas areas in wells ranging in depth down to 7,590 feet. By this arrangement, Mr. Manning's wide experience with these devices continues to be available to operators.

LEADHESION COATING PROCESS

A permanent lead coating of any desired thickness for metal surfaces as a protection against corrosion is being handled by the Gross Engineering Corp., Cleveland, Ohio, by means of its latest development in lead-fusion methods, the "leadhesion" process. The process is applicable to a wide range of tanks, vacuum and pressure vessels, and moving parts of acid or brine-proofed machinery, etc. The process was invented by Louis Gross, president of the company.

NOTES ABOUT TRADE LITERATURE

The Atlas Powder Co., Wilmington, Del., has prepared a booklet of 40 pages on geophysical prospecting with explosives and the seismograph.

The Big Four Foundry Co., Tulsa, is distributing a folder describing the new improved Big 4 counterbalance.

The Otis removable bottom-hole choke is the subject of a folder issued by the Southern States Co., Inc., Slattery Building, Shreveport, La.

The current number of the Water Tower, published by the Chicago Bridge & Iron Works and the Horton Steel Works, Ltd., Chicago, contains an interesting article by L. C. Hamlin on "Evaporation and Its Effect on the Quality of Motor Gasoline."

A four-page bulletin in colors mailed by J. E. Rhoads & Sons, 35 North Sixth Street, Philadelphia, Pa., is devoted to Rhoads tannate belting.

The Caterpillar Twenty-five is described in detail in a 32-page catalog in colors issued by the Caterpillar Tractor Co., Peoria, Ill.

The Sullivan Machinery Co., 400 North Michigan Avenue, Chicago, is sending out a bulletin telling about its "Ready-set" bortz bit service for core-drill users.

The Bott Advertising Agency, Little Rock, Ark., has opened a New York branch in the Chanin Tower Building. that city.

Gearmotors, consisting of speed reducers compactly combined with induction motors into general purpose unit drives are the subject of leaflet 20536, issued by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

The Midwest Tricosal & Material Co., LaSalle Wacker Building, Chicago, is sending out a bulletin describing Tricosal products. Tricosal, it is explained, is a neutral liquid of high colloidal nature, added directly to the mixing water used in making concrete.

"Larger Diesels with Trunk Piston Simplicity," is the subject of a 24-page booklet issued by Busch-Sulzer Co., St. Louis, Mo.

The Hemphill Diesel Engineering Schools, 2121 South San Fernando Road, Los Angeles, Calif., are distributing a reprint from "West Coast Fisheries," which shows the recognition accorded the schools and their graduates.

The Caterpillar Tractor Co., Peoria, Ill., is sending out a broadside descriptive of the new Caterpillar Thirty-five.

BIG FOUR ROTARY COUNTERBALANCE FITS ANY CRANK

It long has been common practice in the oil fields to rig up some form of counterbalance on beam-pumped wells to offset the weight of the string of rods and part of the weight of the fluid column, relieving in this way the duty on the power unit. A new improved counterbalance built by the Big Four Foundry Co., Tulsa, consists of a heavy cast iron frame that clamps to the crank. To this frame can be bolted any number of plates to gain the weight needed for counterbalancing the string of rods.

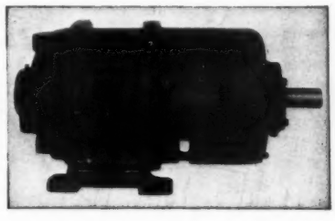
One of the advantages found in this counterbalance, according to the manufacturer, is that it will fit any pattern of crank so that there is no need for change at the well. The counterbalance is fitted for the style of crank in use at the well where it is to be installed before it leaves the foundry and this eliminates the need for any special equipment.

This counterbalance can be installed on the crank at the well in about 1½ hours, the manufacturer says, and one man can remove it in 3 to 4 minutes by the use of a special jack. After the top bolt in the counterbalance is removed the weight can be moved back from the crank without disturbing any of its parts. When removed from the crank nothing is left attached to it which will impair free movement in pulling or running rods or tubing or doing other work around the rig.

The Big Four rotary counterbalance has been tried out thoroughly during the last three years and has given excellent service according to reports received by the manufacturer. It is built in various sizes to meet all conditions and full details can be obtained by addressing the manufacturer.

TWO UNITS COMBINED IN ONE BY THE GEARMOTOR

A simple, compact and efficient arrangement for powering various motor-driven equipment which operates at reduced motor speeds is afforded by new unit drives available from the Westinghouse Electric & Manufacturing Co., Nuttall Works, Pittsburgh, Pa. These new drives, known as gearmotors, consist of speed reducers combined with mo-



tors, forming self-contained units only a few inches longer overall than motors alone. Advantages afforded by this combination of power and speed-reducing equipment include economy in space requirements, easy and simplified installation, reduced number of drive parts, high efficiency of operation, and low maintenance requirements.

Each unit includes a Westinghouse type CS general purpose induction motor and a double reduction, nonplanetary type helical gear speed reducer built onto the one-piece motor frame forming a sturdy and rigid assembly supported entirely by the motor feet.

An improvement incorporated is the prewound primary core which is separable from the stator frame. This feature makes possible marked economies in motor operation and maintenance, and in repair parts stocks. It also permits quick and inexpensive change of motor speed, voltage, and phase.

Practically indestructible rotor, dual treated windings, directed ventilation, and ball bearings are other motor construction features of these drives.

SEAMLESS HOSE FINDING WIDE USES IN INDUSTRY

A seamless, flexible metallic tubing, which is expected to find a place in almost every industry, has been placed on the market by the Bendix Aviation Corp., South Bend, Ind. The new product can be used in any of these general applications: Fluid connections between moving parts; absorption of vibration and conveyance of liquids, semiliquids, steam or gas. The Bendix hose has been applied to such widely varied uses as lubrication, gum manufacture, electric wiring conduits, automobile exhaust pipes, radiator hose, shielding airplane radio, hydraulic and airbrake systems and oil burners. It is said to have withstood pressures of 10,000 pounds to the square inch and temperatures of over 500 degrees. The hose is seamless from the tip of one fitting to the tip of the fitting at the opposite end because the fittings are brazed or welded, forming an integral part of the hose. This construction prevents leaks developing in the hose and breaks between the hose and its fittings.

VALVE SIGNAL DEVICE

The Northern Equipment Co., Erie, Pa., announces an electric signal device for use with the control valve on the Copes feed water regulator. It gives instant warning of any abnormal condition in the boiler feed supply by signaling with a bell or an electric light if the valve should reach the wide-open or fully closed positions.

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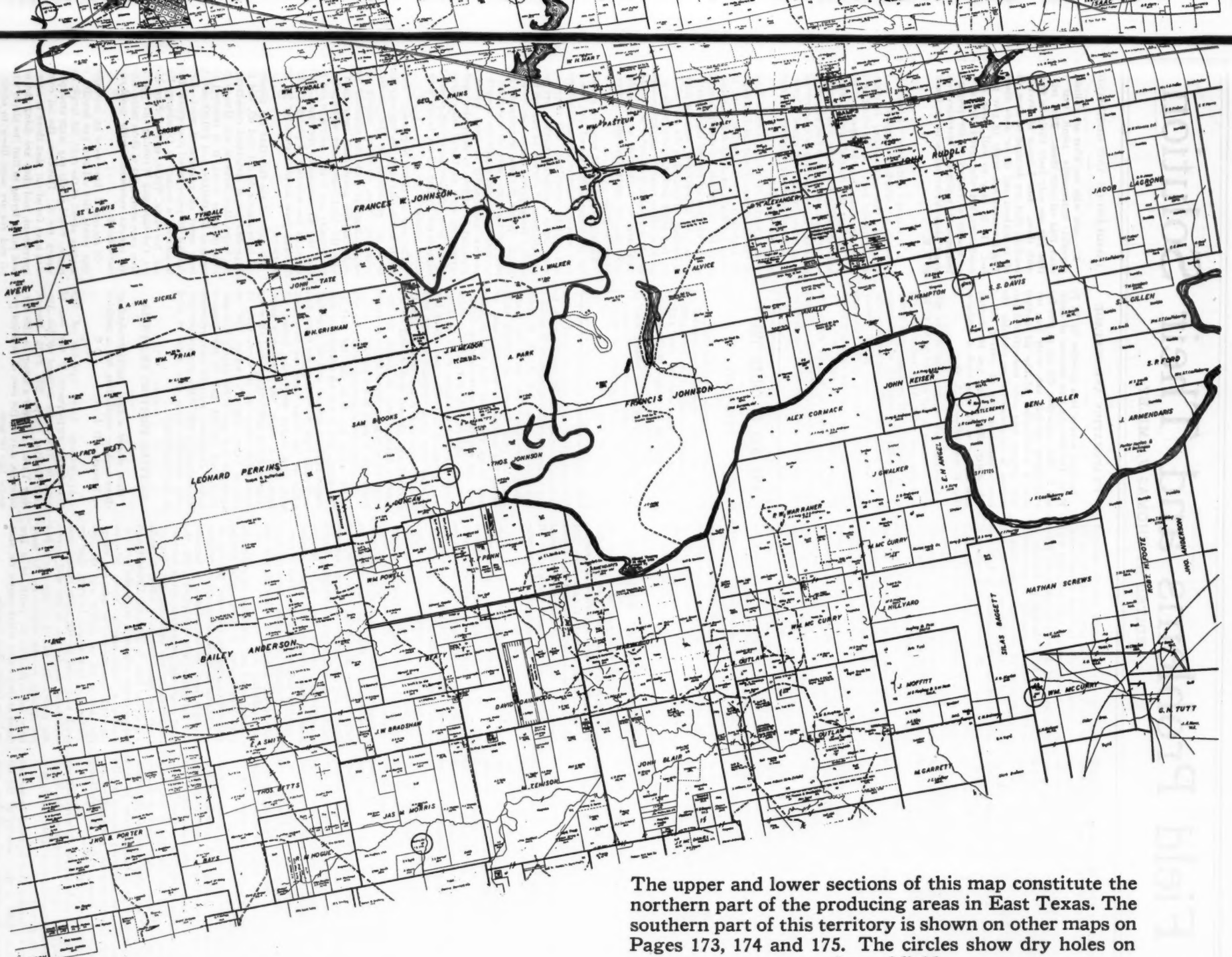
M. B. DAVIS
HAMPTON



The upper and lower sections of this map constitute the northern part of the producing areas in East Texas. The southern part of this territory is shown on other maps on Pages 173, 174 and 175. The circles show dry holes on edges of field.

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

DRAINING THE CRANKCASE

Most of the service stations tell us to drain the crankcase and put in fresh oil every 500 miles or so. I have used my car more than twice that distance without doing anything except adding oil now and then without any bad results that I can find. Is it really necessary for the long life and best performance of a car or truck to drain the crankcase as often as they tell us to?—L. S. E.

Lubrication engineers and the manufacturers of lubricating oils were of the belief formerly that the crankcase should be drained and the oil renewed about every 500 miles, and the known facts at that time supported them in this. More searching experiments and observation, however, have led to modification of this view and a belief that some of the dangers pointed out were probably nonexistent. The result is that lubrication experts, the manufacturers of motor vehicles and the dealers in lubricating oils themselves do not urge 500-mile changes of oil under all conditions, especially in cold weather.

It should be pointed out, however, that there never is danger of overlubrication, but underlubrication is a constant menace to the life and proper operation of an automobile or truck. The cost of lubrication is so small in the light of the benefits derived from it that the average motorist may well play safe and entertain no fear that he is using more oil and grease than is absolutely necessary. He will be manifesting not the slightest deficiency in wisdom, in fact, if he adheres to the 500-mile rule.

H. C. Mougey, of the General Motors Corp., in a paper read before the Western Petroleum Refiners Association, said on this point:

"The viscosity that is most important in these tests is the viscosity of the oil between the pistons and cylinders, and this viscosity is usually greatly reduced by the presence of gasoline in the oil on the cylinder walls. In other words crankcase dilution that we have regarded with such fear and distrust for so many years turns out to be a blessing in disguise in so far as winter starting is concerned. A dilution of 10 per cent in the case of an oil that is about 300 at 100° F. will just about cut the viscosity in half and a dilution of 20 per cent will reduce it to about one-third its original value. This explains why stopping the engine on the choke before turning off the ignition is one of the popular tricks to help cold starting the following morning. The beneficial effect of moderate crankcase dilution is also one of the reasons why some automobile companies do not like to recommend frequent crankcase draining, especially in the winter time. When an undiluted oil is put into the crankcase in winter it may take from 25 to 50 miles of driving before the oil is sufficiently diluted to make the oil thin enough for cold starting or circulation at low temperatures. One of the possible solutions to this problem is the use of prediluted oils. Another solution is the use of oil coolers or 'oil temperature regulators' as they are more properly called. By the use of oil coolers the maximum oil temperature reached in service is reduced, and, as a result, the viscosity of the oil under high speed driving conditions does not decrease so much. This permits the use of an oil that is much lighter in viscosity than would be practical without the oil cooler."

NITROGLYCERIN FAILURES

Is it a fact that part of a charge of nitroglycerin placed in a well has failed to explode through imperfect detonation or some other cause? I have been told also that nitroglycerin lowered into a well has merely burned up instead of exploded in some cases. Are such failures at all common? Can anything be done to prevent them?—T. T. T.

Liquid ntiroglycerin, like any other explosive, if improperly made or improperly used may fail to explode. There are numerous instances of record where liquid nitroglycerin has failed to explode and has been bailed out or otherwise removed from the hole. Any serious obstruction between two bodies of liquid nitroglycerin, such as a body of cavings between two shells, is likely to cause failure of the lower shell. Generally speaking, however, if the explosive is properly made and used there is little reason to fear failure. The main cause for fear should be the danger of premature explosion. A well owner purchasing liquid nitroglycerin should deal with responsible torpedo concerns to insure getting exposives that will explode. This is mentioned because dishonest shooters have substituted water and other liquids for the explosive.

Both liquid and solidified nitroglycerin have been known to burn up in a hole, generally owing to improper placing of the detonator (squib or bomb) in relation to main body of the charge or because the detonator was separated from the main charge by an obstruction or because the explosive was unfit for use. Burned shots are most frequently noted in wells where the hole is of large diameter and the explosive column is of small diameter, leaving a large annular space between the shells and the wall of hole, and where the shot is set on anchor and the detonator is a jack squib. In such case the squib may pass by the main charge and explode at the bottom of the well, exerting practically all its energy there and yet causing enough impact on the main body of explosives to result in a low order of detonation which causes the shot to burn rather than explode.

EVAPORATION AND SEEPAGE

In your answer to a question by N. E. E. in The Oil and Gas Journal of January 7, 1932, regarding the use of pits for evaporating oil-field salt water you say that a combination of the pit method with seepage into some underground formation is recommended as probably the most economical way of getting rid of this water. May I ask you for further information as to how such a combination is worked?—N. A. O.

Location and construction of the pits were discussed in the answer to N. E. E., to which you refer. As to combining the use of the pits with seepage, thus greatly increasing the capacity of the brine-disposal plant, the following recommendations were obtained from M. H. Shanahan and Scott C. Miller, of the Continental Oil Co., who provided the suggestions for construction of the pits:

"Pits can often be located where the water from the bottom of the pit will seep into the formation and cause no damage.

WHY WAS IT CALLED THAT?

CORDUROY

Corduroy roads are familiar in the oil fields, especially in wooded or swampy regions. They are made by laying logs side by side and thus suggest the ridges of the cotton fabric known as corduroy, which has a piled, or ribbed, surface. The word "corduroy" is supposedly an anglicized form of corde du roy, or king's cord.

However, great care must be used and a thorough survey and knowledge must be had of the surrounding country in making locations for this kind of pit. A place where a conglomerate, sand or sandy loam, or even fissures or cracks exist under the surface is selected, and we must be careful to see that none of these lead into any fresh water bearing formation, or outcrop in any nearby place where salt water damage could be done. It is supposed that after salt water has traveled some great distance through this kind of formation it has been so greatly purified and filtered that it will do no hurt or damage, but, of course, the distance which it must travel before it would reach such a state is not known.

"We have had experience with pits into which water has been run for four to five years, and it has all evaporated and seeped into the ground, and we have had no trouble from it (we hope we never do), while on the other hand we have seen such pits where everything looked all right for a while, but eventually fountains of living salt water would show up even miles away as it were, and, of course, every farmer's water well or spring in that end of the county was polluted, and all the fish in the streams killed. Therefore, we can only reiterate the statement, that while seepage pits are very desirable, great care must be used in locating them."

GETTING POSITION IN RUSSIA

How should a field superintendent go about making application for a position in Russia?—D. J.

Applications from residents of this country for employment in any line of work in Russia are handled by the Amtorg Trading Corp., 261 Fifth Avenue, New York. Address a letter to this corporation, stating the sort of position you would like to have.

DOODLEBUGS AND GEOPHYSICS

The men who use what are called geophysical instruments admit that they can't find oil with them. They tell you that you are only more likely to find oil with them. But I know of several inventions that are declared to show where oil is without any ifs or ands about it. The inventors are ready to give proofs, too. It is easy to call these devices doodlebugs, but why aren't they at least as worthy of respect as the geophysical instruments, which the inventors confess won't show where oil is to be found?—E. T. E.

A primary difference between the "doodlebug," which is supposed to find oil, and the geophysical instrument, which merely helps in the effort to find places favorable for the deposit of oil or gas, is that the doodlebug does not embody scientific principles and is not operated by a scientist, while genuine geophysical instruments are constructed in accordance with recognized laws of science and must be operated by men of scientific training.

Dr. Charles N. Gould, former director of the Oklahoma Geological Survey, says in answer to your question that there never yet has been devised a machine, instrument or method for determining definitely whether or not oil lies beneath the surface of a particular area in advance of drilling. The drill is the only oil finder, but since drilling deep wells is expensive, oil companies employ geologists, geophysical men and other scientists to eliminate as much risk as possible by selecting the most favorable places on which to drill.

There are four chief types of geophysical instruments in general use, the torsion balance, magnetometer, seismograph and gravity pendulum. All these, each working by a different method, are based on principles of physics as applied to the earth. Geophysical means physics of the earth. None of these instruments finds oil, but they are used to ascertain abnormal or unusual conditions beneath the surface, particularly in areas where the geologist is unable to determine surface structures, such as buried hills, granite peaks, or subsurface anticlines where the chances for finding oil are better than at other places.

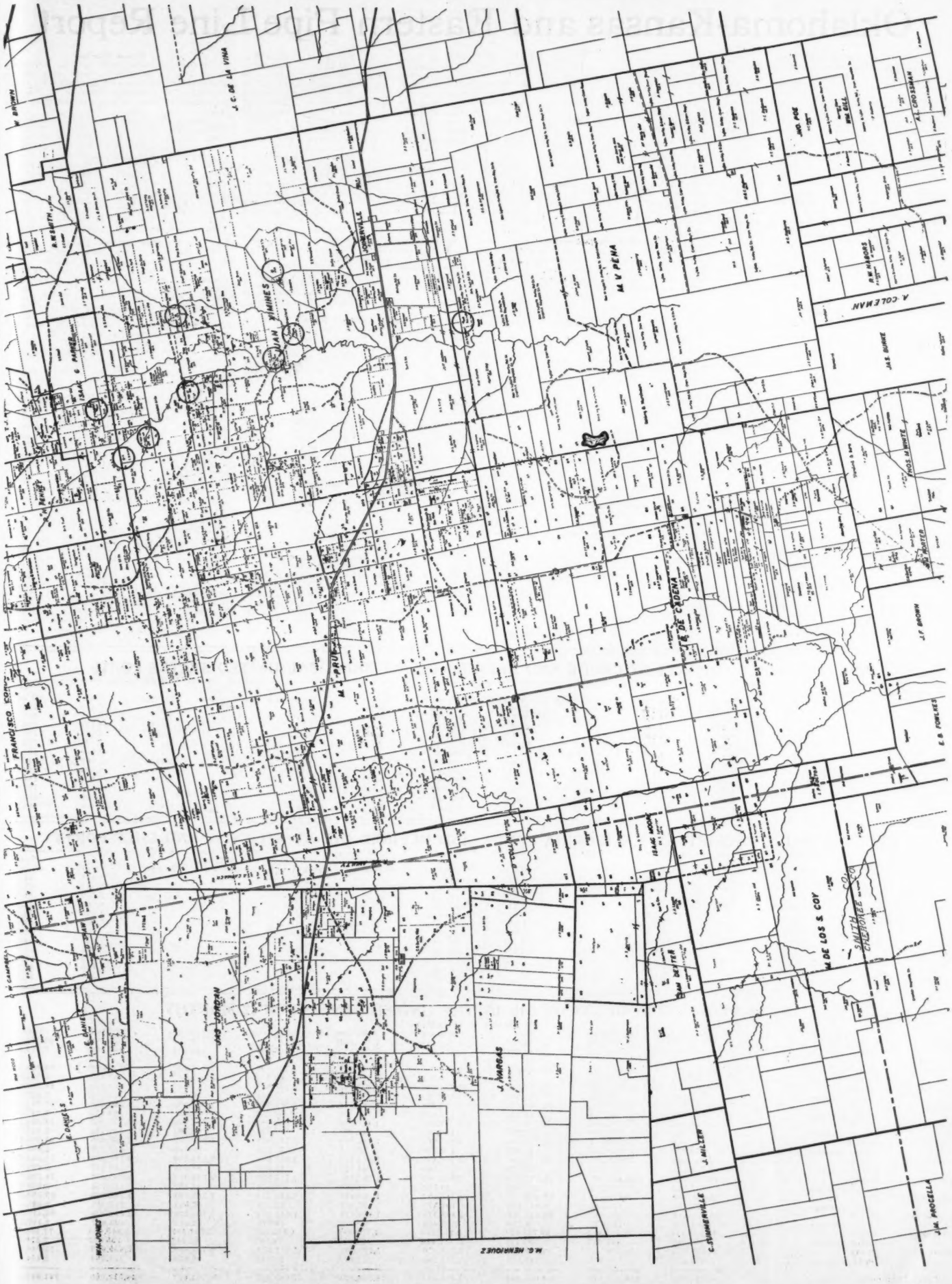
The use of these geophysical instruments by the oil companies has sometimes been an advantage to the doodlebug promoter, who, working among persons unfamiliar with the scientific principles of the geophysical instrument or with the conditions under which oil and gas usually are found, points to the fact that the oil companies are using instruments in the selection of places for drilling and then makes claims for his own machine.

In spite of the fact that the geophysical instruments do not find oil, and that interpretation of structural conditions of the subsurface rocks is not always possible in many areas, it is reported that between $30,000,000 and $40,000,000 has been spent on geophysical work during the last 10 years by oil companies. There is scarcely a county in Oklahoma, Kansas, Nebraska, Texas, eastern New Mexico, Colorado and Wyoming that has not been gone over, most of them many times, by various companies with geophysical instruments.

Of course, if there were an instrument that would find oil and gas beneath the surface ahead of the drill, the larger companies would gladly pay large amounts of money for it. However, the oil companies have found out that there is no such instrument, and they are doing the next best thing, trying to find the places where oil and gas are most likely to occur.

South section of the producing areas in East Texas Field.
Other parts on Pages 174 and 175.

J. W. BENNETT
JACOB BENNETT
A. C. HERO
M. T. LITTLE
M. A. YOUNG
J. GRAGE
DANIEL CLARK
G. COOPER
THOS. ANDERSON
G. GUTHRIE
J. DICKERSON
J. HENRY
M. C. OBEE
J. J. MARTIN
J. W. GEORGE
A. DAVY
D. L. P. CRAIG
W. M. ROGERS
E. PLUMMETT
SPARKS SR.
J. BLACKMAN
A. J. ADAMS
J. MASON
N. H. FOWLER
W. E. BEECHER
T. C. LOVE
W. E. HALEY
J. W. SCOTT
E. COLLARD
LONDON


J. C. DE LA VINA
M. V. PEÑA
A. COLEMAN
J. F. BROWN
M. DE LOS S. COY
J. NARBAS
M. G. HENRIQUEZ

Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS
Pipe Line Statement for November

Runs

	Month (bbls.)	Dy.av. (bbls.)
Prairie P. L. Co.*	705,000	23,500
Gulf P. L. Co.	1,710,611	57,020
Texas P. L. Co.	779,160	25,972
Magnolia P. L. Co.	1,683,675	56,123
Empire P. L. Co.	2,507,976	83,599
Cosden P. L. Co.	670,597	22,353
Stanolind P. L. Co.*	3,300,000	110,000
Oklahoma P. L. Co.	2,067,697	68,923
Other lines	6,137,700	204,590
Total November	19,562,416	652,080
Total October	16,133,640	520,440
Difference	3,428,776	131,640

Shipments

Prairie P. L. Co.	2,778,792	92,626
Gulf P. L. Co.	1,229,969	40,999
Texas P. L. Co.	1,027,055	34,235
Magnolia P. L. Co.	1,424,446	47,482
Empire P. L. Co.	2,309,020	76,967
Cosden P. L. Co.	847,224	28,241
Stanolind P. L. Co.	3,622,000	120,750
Oklahoma P. L. Co.	1,940,538	64,685
Other lines*	4,650,000	155,000
Total November	19,829,044	660,985
Total October	20,000,828	645,188
Difference	171,784	15,797

Stocks

Prairie O. & G. Co.*	35,781,000
Gulf P. L. and Gypsy Oil Co.	5,036,722
The Texas Company	2,598,218
Magnolia Petroleum Co.	7,330,313
Empire P. L. Co.	3,637,085
Mid-Continent Petroleum Corp.	3,280,873
Stanolind Crude Oil Pur. Co.*	16,631,000
Oklahoma P. L. Co.	1,394,820
Carter Oil Co.	6,853,352
Other lines*	15,482,000
Total November	100,025,383
Total October	98,180,971
Difference	1,844,412

*Estimated.

EASTERN PIPE LINE REPORT FOR MONTH OF DECEMBER

Runs From Wells

In the following tables will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky, Illinois, Indiana and Michigan for November and December:

	Nov.,'31	Dec.,'31
Nat. Transit	124,750.97	134,728.53
S. W. Pa. P. L.	74,098.69	78,639.10
Eureka P. L.	283,984.98	304,834.50
Buckeye P. L. (Macksburg)	257,058.99	276,673.59
Buckeye P. L. (Cleveland)	12,136.62	12,125.02
Buckeye P. L. Lima, etc.	66,302.98	77,185.73
Indiana P. L.	2,833.35	2,581.64
N. Y. Transit	37,877.10	42,593.82
Tide Water P. L.	23,526.84	24,880.76
Pure Oil	294,109.73	350,431.59
Stoll Oil Ref.	77,377.78	36,806.03
Bradford Trans.	396,444.21	422,865.63
Ashland Ref.	144,095.48	152,539.88
Total	1,794,597.72	1,916,885.82
Daily average	59,819.92	61,835.03

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for November and December.

	Nov.,'31	Dec.,'31
Nat. Transit	555,055.73	554,540.59
S. W. Pa. P. L.	353,585.86	426,018.53
Eureka P. L.	270,980.17	318,074.34
Buckeye P. L. (Macksburg)	228,820.83	233,257.65
Buckeye P. L. (Cleveland)	1,715.98	1,709.74
Buckeye P. L. (Lima, etc.)	1,702,435.58	1,578,295.69
Indiana P. L.	754,554.80	738,240.53
Southern P. L.	70,467.39	61,182.44
N. Y. Transit	192,298.27	176,524.14
Northern P. L.	151,356.84	134,129.64
Tide Water P. L.	424,477.09	272,501.01
Pure Oil	394,500.51	190,150.36
Bradford Trans.	413,554.01	448,373.68
Tuscarora	266,328.33	330,473.61
Ashland Ref.	112,625.92	
Total	5,892,757.31	5,463,472.00
Daily average	196,425.26	176,241.03

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of November and December:

	Nov.,'31	Dec.,'31
Nat. Transit	695,594.17	647,268.73
S. W. Pa. P. L.	415,253.99	484,609.86
Eureka P. L.	1,207,018.46	1,205,561.50
Buckeye P. L. (Macksburg)	284,220.29	298,989.13
Buckeye P. L. (Cleveland)	46,414.61	45,407.41
Buckeye P. L. (Lima, etc.)	2,616,930.98	2,890,304.17
Indiana P. L.	561,296.24	543,883.39
Cumberland P. L.	64,408.44	64,500.81
Southern P. L.	183,750.86	229,411.72
N. Y. Transit	111,520.13	145,567.39
Northern P. L.	328,199.83	314,690.06
Tide Water P. L.	941,847.74	1,107,832.07
Pure Oil	481,451.24	803,723.79
Tuscarora	11,135.10	10,793.98
Brad. Trans.	328,694.79	326,488.02
Ashland Ref.	552,649.50	
Total	8,830,386.37	9,119,032.53
Increase	412,681.46	288,646.16

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of November and December, showing gross stocks of the above fields:

	Nov.,'31	Dec.,'31
Pennsylvania	2,961,620.08	3,289,870.05
Lima	602,227.52	598,134.96
Kentucky	627,465.45	74,898.32
Mid-Continent	4,143,909.75	4,422,734.01
Illinois	23,229.59	
Michigan	471,933.98	733,395.19
Total	8,830,386.37	9,119,032.53

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1928	1929	1930	1931
Jan.	52,904	51,749	75,907	53,939
Feb.	57,002	51,833	79,256	55,163
Mar.	57,485	54,252	76,688	54,331
April	56,812	58,444	84,536	54,914
May	62,067	59,902	70,546	53,344
June	58,230	58,833	75,430	54,110
July	57,144	66,087	68,921	50,723
Aug.	57,745	66,087	54,291	51,503
Sept.	53,487	67,315	56,595	61,345
Oct.	58,100	76,093	58,179	64,595
Nov.	53,865	74,831	52,332	59,819
Dec.	52,025	74,561	53,999	61,835

Daily Average Shipments

The following table shows daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1928	1929	1930	1931
Jan.	146,465	165,721	217,623	175,369
Feb.	167,368	159,387	224,355	183,494
Mar.	158,883	161,474	228,846	189,508
April	172,935	169,737	241,845	191,450
May	180,559	184,281	248,383	199,247
June	188,024	185,404	234,401	221,155
July	189,470	194,763	207,094	211,632
Aug.	192,853	194,946	205,506	224,166
Sept.	194,138	201,214	193,999	217,537
Oct.	176,000	191,367	157,675	210,831
Nov.	176,898	202,743	146,638	196,425
Dec.	173,572	186,257	143,001	176,241

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1929	1930	1931
Jan.	7,596,564	12,220,045	11,831,092
Feb.	8,738,835	12,991,561	11,506,489
Mar.	9,002,058	13,247,217	11,012,162
April	8,978,172	13,233,961	11,044,487
May	8,903,560	13,052,953	10,728,239
June	8,921,275	13,396,855	9,903,349
July	9,211,565	13,268,562	9,569,849
Aug.	9,440,643	13,047,051	9,192,457
Sept.	9,443,067	12,812,018	8,492,431
Oct.	9,441,101	12,437,553	8,417,694
Nov.	9,868,538	11,851,380	8,830,386
Dec.	11,253,953	11,751,952	9,119,032

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks Jan. 1	440,110.92
Runs from wells	490,830.52
Other receipts	303.58
Regular deliveries	263,402.75
Other deliveries	207,408.59

The amount of Illinois oil run by the Tide Water Pipe Co. in December was 24,880.76 bbls. Deliveries were 43,220.44 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1931	Runs	Deliveries
December	515,771.28	306,623.19
1930		
January	543,387.95	498,293.93
February	548,416.33	414,536.59
March	631,944.49	469,119.53
April	530,074.22	509,304.60
May	605,147.37	504,069.84
June	572,662.57	468,658.81
July	604,529.54	388,454.47
August	594,642.12	375,742.43
September	457,001.11	371,691.63
October	478,442.12	320,688.73
November	422,794.68	355,403.12
December	556,418.78	363,719.55
1931		
January	468,429.04	669,573.19
February	429,284.54	461,262.85
March	424,638.23	356,663.26
April	421,814.98	282,532.65
May	433,231.80	322,513.95
June	510,805.78	320,258.13
July	520,009.38	289,210.05
August	476,623.56	393,231.06
September	492,183.83	323,012.50
October	498,124.13	325,834.95
November	470,302.63	281,258.48

Tide Wate Pipe Co., Ltd., also delivered in December, 102,199.72 bbls., Oklahoma oil.

AVERAGE DAILY IMPORTS OF CRUDE AND REFINED OIL AT PRINCIPAL UNITED STATES PORTS

Average barrels per day in 1930-31—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
December	21,419	14,833	122,774	33,839	33,774	224,639	6,290	10,613	2,097	290	19,290	244,129
January	17,613	13,519	164,235	33,902	30,612	248,871	2,032	11,677	2,097	3,097	18,903	267,774
February	31,331	16,929	127,786	31,714	26,857	234,607	4,536	11,571	....	536	16,643	251,250
March	27,645	18,935	141,160	26,290	21,129	238,161	4,065	2,580	....	1,968	8,613	246,774
April	35,000	10,533	105,000	29,767	35,533	215,833	2,733	3,400	....	....	6,133	221,966
May	30,139	8,774	107,000	25,452	26,710	198,065	....	2,000	....	....	2,000	200,065
June	30,067	10,833	111,767	27,000	20,833	200,500	3,300	5,500	2,167	1,333	12,300	212,800
July	26,287	11,226	104,678	29,323	21,773	193,287	6,903	7,419	4,194	....	18,516	211,803
August	32,613	15,581	91,742	22,387	25,741	188,064	4,161	2,516	....	3,162	9,839	197,903
September	27,067	7,367	106,867	30,099	22,967	194,367	4,833	3,333	....	....	13,166	197,533
October	53,710	14,484	100,774	36,742	40,645	236,355	6,097	6,871	2,097	1,838	16,903	253,258
November	42,033	28,800	51,667	28,600	12,967	170,067	3,933	10,833	3,033	1,367	19,166	189,233

AVERAGE DAILY RECEIPTS OF CALIFORNIA CRUDE AND REFINED OIL AT ATLANTIC AND GULF PORTS

Average barrels per day in 1930-31—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
December	5,516	4,333	30,645	9,678	3,580	53,743	....	....	....	....	4,645	58,387
January	8,387	6,613	21,968	14,678	11,096	62,742	....	....	....	....	6,129	68,871
February	5,787	2,713	29,143	4,000	5,750	47,393	....	....	....	....	3,750	51,143
March	10,032	1,611	21,388	7,324	8,774	49,129	....	....	....	....	6,355	55,484
April	5,133	....	19,200	16,500	10,067	50,900	....	....	....	....	4,000	54,900
May	4,452	3,064	19,903	11,226	6,258	44,903	....	....	....	....	2,355	47,258
June	4,267	....	25,100	6,333	3,500	39,200	....	....	....	....	....	39,200
July	6,774	1,194	24,612	11,065	9,902	53,548	....	....	....	....	1,335	54,903
August	3,452	....	16,419	7,419	4,290	31,580	....	....	....	....	968	32,548
September	4,267	3,667	12,933	4,699	7,367	32,933	....	....	....	....	4,000	36,933
October	2,355	1,129	19,290	16,709	9,323	48,806	....	....	....	....	3,323	52,129
November	1,000	....	22,800	11,567	....	35,367	....	....	....	....	3,366	38,733

GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES FOR 12 MONTHS

(In Barrels of 42 Gallons)

1930—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
December:	Month	17,786,728	15,057,103	21,810,359	3,432,661	1,590,951	2,157,534	3,118,663	3,328,000	68,281,999
	Daily average	573,765	485,713	703,560	110,731	51,321	69,598	100,602	107,355	2,202,645
1931—										
January:	Month	16,485,738	14,850,953	20,019,212	3,432,475	1,574,955	2,135,037	2,966,142	3,374,000	64,838,512
	Daily average	531,798	479,063	645,781	110,725	50,805	68,872	95,682	108,839	2,091,566
February:	Month	14,930,932	13,531,980	18,957,571	3,341,016	1,402,492	1,981,616	2,747,024	3,129,000	60,021,631
	Daily average	533,248	483,285	677,057	119,322	50,089	70,772	98,108	111,750	2,143,629
March:	Month	16,364,842	16,627,687	22,453,619	3,493,598	1,469,245	2,061,576	2,898,035	3,374,000	68,747,602
	Daily average	527,898	536,377	724,310	112,858	47,395	66,502	93,485	108,839	2,217,665
April:	Month	15,803,541	16,815,990	26,887,717	3,281,880	1,412,220	2,008,021	2,901,870	3,273,000	72,384,239
	Daily average	526,785	559,255	896,257	109,396	47,074	66,934	96,729	109,100	2,412,808
May:	Month	16,448,960	17,333,867	28,708,684	3,341,366	1,446,274	2,232,568	3,098,419	3,190,000	75,800,138
	Daily average	530,612	559,157	926,086	107,786	46,654	72,018	99,949	102,900	2,445,166
June:	Month	15,641,436	16,678,200	29,139,833	3,175,440	1,344,450	1,850,511	2,986,200	3,166,000	73,982,070
	Daily average	521,381	555,940	971,327	105,848	44,815	61,684	99,540	105,533	2,466,069
July:	Month	16,093,322	16,467,789	33,827,213	3,090,762	1,287,420	1,716,730	2,905,909	3,241,000	78,729,155
	Daily average	519,139	531,219	1,091,200	99,702	41,530	55,345	93,739	107,774	2,539,650
August:	Month	15,668,984	9,678,510	32,279,816	3,148,887	1,165,445	1,584,444	2,807,143	3,167,000	69,500,229
	Daily average	505,451	312,210	1,041,284	101,577	37,595	51,111	90,553	102,161	2,241,942
September:	Month	15,130,610	7,930,330	28,981,525	3,151,770	1,138,380	1,641,384	2,761,230	3,632,000	64,417,729
	Daily average	504,020	264,361	966,051	105,059	37,946	54,713	92,041	121,067	2,147,257
October:	Month	15,651,983	12,951,893	30,725,173	3,177,066	1,172,389	1,822,255	2,797,597	3,900,000	72,198,356
	Daily average	504,903	417,803	991,134	102,486	37,819	58,782	90,247	125,807	2,328,979
November:	Month	14,997,700	16,430,730	28,860,561	3,131,670	1,130,700	1,851,577	2,706,390	3,639,000	72,748,328
	Daily average	499,923	547,691	962,018	104,389	37,690	61,719	90,213	121,300	2,424,946
Total 12 months		191,054,776	174,355,532	322,651,283	39,203,591	16,134,931	23,042,253	34,694,622	40,513,000	841,649,988

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Annual Number

The OIL and GAS JOURNAL

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PRODUCING REFINING PIPELINE ENGINEERING MARKETING

Published Every Thursday TULSA, OKLAHOMA, JANUARY 28, 1932 Subscription $6.00 a Year

JAN 29 1932

Advertisers' Index on Page 9

Table of Contents on Page 10

The New CHAPMAN Lubricated PLUG COCK

Here is the simple sequence of operation which gives this plug cock all the advantages of the old-fashioned cock —AND CUTS OUT THE TROUBLES.

In opening, a single continuous turning motion of the stem raises the plug to a predetermined clearance, then turns it freely to the open position. In closing, a reverse turning motion of the stem rotates the plug with plenty of clearance to the closed position, then drives it down hard against the seat for a leakless seal. There can be no sticking or scoring of surfaces in operating this plug cock.

And when it's tight, IT'S TIGHT. The tapered plug moves straight down into the tapered seat. No grease seal is needed. Although this is a lubricated cock, the lubrication is not essential to its operation nor to its tightness. Wonderfully useful in high temperature and high pressure lines, where ordinary lubricated designs fail.

The new bulletin gives complete information. Every oil man will want it. Use the coupon below.

The Chapman Valve Manufacturing Co.

INDIAN ORCHARD, MASS.

Valves for the oil industry carried in stock at

Los Angeles—2314 E. Eighth St. San Francisco—525 Fourth St. Houston—2610 Bell Ave.
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The tapered plug works VERTICALLY

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Send me the bulletin on the new plug cock.

Bethlehem Seamless Refinery Vessels being subjected to Hydrostatic Test.

For high-pressure Cracking Processes use these SEAMLESS Vessels

Bethlehem Seamless Refinery Vessels offer the liberal margin of safety so essential in high-pressure cracking units. These one-piece vessels, each forged from a single ingot, have heavy seamless walls, and abundant strength to withstand the enormous pressures encountered in cracking processes.

This company's years of experience in making heavy forgings of all types assure the user of Bethlehem Seamless Refinery Vessels of a product of the highest quality. Bethlehem's extensive facilities make possible the production of these vessels over a wide range of diameters, lengths, and wall thicknesses.

BETHLEHEM STEEL COMPANY
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BETHLEHEM STEEL

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BETHLEHEM

The **Oil and Gas Journal**, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription price $6.00 a year; 15 cents a copy. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Okla., under the Act of March 3, 1879.

Youngstown Seamless Drill Pipe is available in 95,000 pounds API Grade D, and 110,000 pounds API Grade E, minimum tensile strength.

In DRILLING

Rotary drilling—with Youngstown seamless in California Territory. Thousands of such wells have demonstrated that there is no superior to Youngstown drill pipe, tubing and casing.

In DISTRIBUTION

Laying a line of Youngstown 20" electric-weld pipe in Virginia.

OUT in the fields where wells are drilled or—stretching across the country to the centers of consumption, Youngstown steel pipe is serving the oil and gas industries in wells and pipe lines.

■ Whatever the service, whatever the conditions, the strength and endurance of this fine steel pipe is evidenced by its long life, its ability to stand abuse and its resistance to the corrosive actions of soil, atmosphere and moisture.

■ Thousands of miles of Youngstown pipe—in wells and pipe lines—have proved to oil and gas men the country over that Youngstown is a safe investment for every pipe need.

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One of the oldest manufacturers of copper-steel, under the well-known and established trade name "Copperoid"

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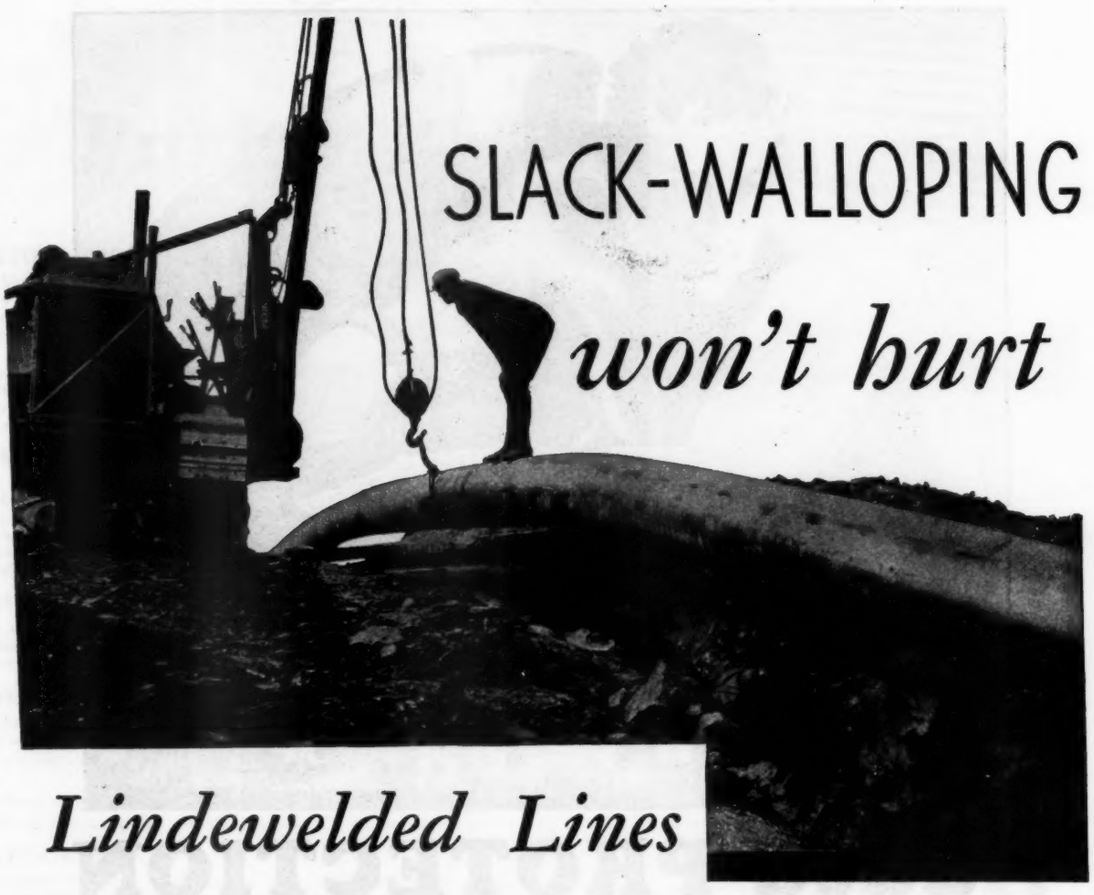
YOUNGSTOWN

FROM ORE MINE TO GAS LINE



SLACK-WALLOPING *won't hurt*

Lindewelded Lines

A TEXAS pipe line company subjected a 2,000-ft. test section of 24-in. Lindewelded line to severe bending strains by "slack-walloping" it on skids over a 64-in. trench. The line was allowed to expand and contract with changing temperatures. Not a joint failed. Lindewelding insures strength.

It saves money, too.

Lindewelding takes 30 to 60 per cent. less time than other methods and 30 to 40 per cent. less welding material. It is not a new kind of welding; it is a new way to do oxy-acetylene welding. It can be done with ordinary blowpipes or with special apparatus which makes welding almost automatic and further increases its speed. Experienced welders quickly master Lindewelding technique; beginners learn it more readily than other methods.

Procedure controls for this cost-cutting method of oxy-acetylene welding are available to all Linde customers as a part of Linde Process Service. Any Linde District Office will be glad to give you complete information.

Motion Picture Shows details of Lindewelding

Lindewelding technique differs from neutral-flame welding technique in that it employs a special rod, a special flame adjustment, and the "backhand" method of blowpipe manipulation. The actual steps in making a Lindewelded joint are shown in our motion picture, "The Lindeweld Process for Pipe Line Construction". This picture will be loaned free of charge to pipe line officials and welding or engineering societies. It is furnished in 16 mm. and 35 mm. safety film and can be obtained by writing to any Linde District Office.

THE LINDE AIR PRODUCTS COMPANY

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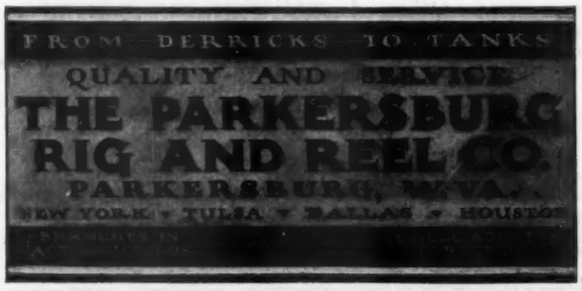
Added PROTECTION

SHIELDED from the fiery rays of the sun—protected against sudden changes from the intense heat of day to the raw, shivering, cold of night—Parkersburg Vapor-Tight Tanks stand guard over costly contents, defeating the thief of evaporation.

Gas-tight tanks were pioneered by Parkersburg and perfected by Parkersburg improved valves. In active oil fields everywhere, Parkersburg Quality, Bolted Steel Tanks —Aluminum-Coated—equipped with Parkersburg Vapor-Pressure Fittings, bring definite economies by maintaining the gravity of the crude. In corrosive districts, Parkersburg all-aluminum, and aluminum-steel composite tanks, are successfully combating the corrosive effects of hydrogen sulphide.

Parkersburg is equipped to furnish Tanks in sizes ranging from 30 to 10,000 barrels from stock, in all the principal Mid-Continent and Gulf Coast districts, and efficient erection crews are in readiness at all times to answer any call for service.

A phone call to the nearest Parkersburg Branch will bring tanks and crews without delay.



This Seal of Quality and Service on Parkersburg Equipment is Your Guarantee.

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TRADE MARK REG

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FEATHER VALVE COMPRESSORS

Portable "Air-King"—gasoline engine and electric motor drive; 110 cu. ft. to 360 cu. ft. displacement; single-stage and two-stage; horizontal and vertical; motor truck, tractor, trailer, railroad car and mine car mountings. For contractor, railroad, mine, quarry and industrial requirements.

Stationary—Electric motor, steam, Diesel engine, gas engine, flat belt and V-belt drive; single-stage and multi-stage; for air, gas or ammonia service; sizes and capacities to meet entire range of industrial requirements. Air lift and gas lift units.

ROCK DRILLING EQUIPMENT

Rock Hammers for hand drilling rock, shaft sinking, etc. Auger drills for coal mining. Drifters for mine tunneling, opening and development work, and hydro-electric construction work, aqueducts, dams, locks, etc. Broaching drills. Plug and feather drills. Forging furnaces and automatic heat treating machines for drill steel. Drill steel, hose and other accessories.

CONTRACTORS AIR TOOLS

Clay spades, trench diggers and backfill tampers; for conduit, sewer and other trench work. Pavement breakers, asphalt cutters and concrete breakers.

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Vertical types for direct power or generator service—stationary and marine service.

Single-acting—two-cycle, solid injection; four-cycle, air or direct injection.

Double-acting—two-cycle, air injection.

Ranges of power through various types from 50 hp. to 12,000 hp.

GAS ENGINES

Horizontal four-cycle double-acting type; utilizing natural or blast furnace gas; for power or gas compressor service. Sizes 160 hp. to 5000 hp.

Vertical four-cycle single-acting type; for generator and general power service. Sizes 50 hp. to 1800 hp.

MULTI-V-DRIVES

V-molded rubberized cord belts running in V-grooved sheaves. Wedging contact transmits power smoothly, efficiently and economically over short centers. Capacities ½ hp. to 1000 hp. Developed in conjunction with Goodyear Tire and Rubber Company.

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For cold or hot water, boiler feedwater, cold or hot oil, distillates, gasoline, grease, etc. Built in disc, turbine-velocity, compound and piston displacement types in ranges of size to meet practically all industrial requirements.

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Stationary and Marine—Open type. water is heated by direct contact with steam, assuring maximum heating and highest temperature with least waste. Water is purified and deaerated. Pronounced saving in water and coal.

Locomotive—Open type. The most effective means of heating feedwater for locomotive use. Average results show that these heaters remove 80% corrosive oxygen from the water and effect savings of 12% in fuel and 14% in water.

STEAM CONDENSERS

Surface, barometric and jet condensers of varied types and sizes, in ranges of capacity from the small power plant to the largest public service central power station requirements. Also complete systems, including condenser auxiliaries, vacuum pumps, steam-air ejectors, etc.

PUMPS

Steam Pumps—Reciprocating crank-and-flywheel and direct-acting types; simplex, duplex and duoplex; horizontal and vertical; piston and plunger; simple, compound and triple expansion; condensing and non-condensing. Complete lines of pumps for water, hot and cold oil, and other liquids.

Centrifugal Pumps—Volute and turbine; horizontal and vertical; single-stage and multi-stage; open and closed impeller types. For electric motor, engine, turbine, belt or other drive. Standard construction for general service, and special designs and materials for oil, acids, brine, sewage and paper stock. High efficiency pumps for waterworks and other exacting services. Capacities from 5 g.p.m. Monobloc type to 250,000 g.p.m. drainage and circulating types. Pressures from 2 ft. head propeller type to 2,000 lb. boiler feed type.

Power Pumps—Horizontal and vertical; single, duplex and triplex; piston and plunger; for belt, gear, motor or engine drive. A wide range of sizes and types for all kinds of service.

Rotary Pumps—Types for handling light or heavy, non-abrasive and non-corrosive liquids having either lubricating or non-lubricating qualities. Positive displacement. For belt drive or direct connection to motor.

Deep Well Pumps—Rotating shaft types: Axiflo and Coniflo pumps with electric motor, belt or steam turbine drive; for depths to 400 ft.; operate with constant high efficiency and with non-overloading horsepower characteristics.

Reciprocating types: Single-acting and double-acting single plunger, and single-acting two and three plunger pumps; for wells deeper than 400 ft.

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Irrigation and Drainage Pumps—Axiflo and centrifugal, for rice fields, cranberry bogs, farm lands, drydocks, cofferdams, etc.

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For machinery parts, such as rolls, platens, piston rods, driving shafts, valves, etc., where resistance to wear, abrasion, corrosion or high temperature is important, or where low coefficient of friction is desired Worthington is fully equipped for the highly skilled treatment necessary for this class of plating, and invites correspondence on requirements.

INQUIRIES

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WORTHINGTON G-115-A

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WORTHINGTON

36 YEARS AGO

they dammed the Kawishiwi

and defied it to rust out the

WROUGHT IRON

THE KIND THAT HIGHLAND MAKES

In 1895 the St. Croix Lumber and Manufacturing Co. built the logging dam shown above at Kawaschachong Falls, on the Kawishiwi River, near Winton, Minnesota.

The 15-inch spikes illustrated at the right, and the 4x½ inch half-oval bars on the face of the dam are all of Wrought Iron. 90% of this material is in excellent condition today and could be used the second time.

●

They're Cutting Metal Costs in the Oil Industry

Highland Wrought Iron has come to the aid of engineers and executives in charge of construction and maintenance whose researches have included investigation of premature failures of Roofing and Tank Plates—Bolts—Nuts—Sucker Rods, etc.

Oil field conditions call for a highly specialized metal—one that is proof against powerful corrosive forces. You'll find that metal—in Highland Wrought Iron.

●

HIGHLAND WROUGHT IRON

IT'S not difficult to picture the sturdy ermen of northern Minnesota considering the future of the dam they were building and cheerfully daring the Kawishiwi to do its worst.

Here was a barrier of great logs, linked together with Wrought Iron spikes—faced with Wrought Iron bars. Here was a control of slack water and spring floods strong enough to withstand ice floes and log jams.

This dam was built for the years—it stands intact today. Another monument to the endurance of Wrought Iron — The Kind That Highland Makes.

We can't tell you what your metal losses are today. We can't give you figures of losses through CORROSIS (Progressive Corrosion Fatigue). But *you* should investigate what smoke, fumes, humidity and salt air are doing to your present metals—metals which can not long resist such attacks.

Highland Wrought Iron can and does stand up for centuries—against the ravages of the elements. Because of its stratified structure and the impenetrable walls of Iron Silicate.

Write for information that will put a stop loss order on your metal waste.

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Complete stocks of Pittsburgh Seamless Drill Pipe, Casing and Oil Well Tubing at our storage yards in Memphis enable us to serve Mid-Continent and Gulf Coast producers in record time at all times. When speed is essential wire:

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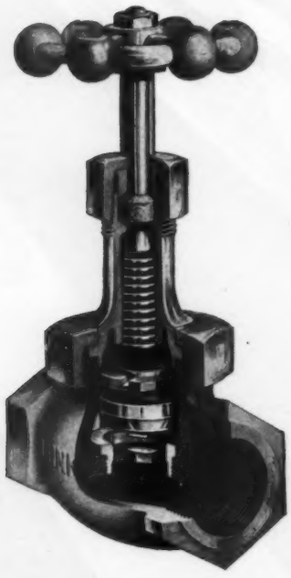

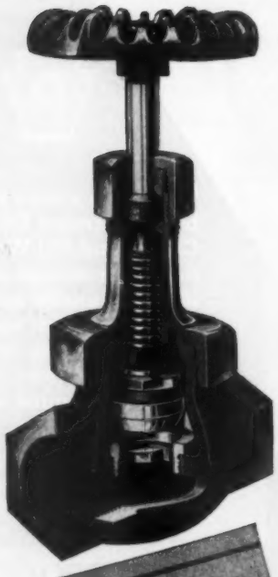

Descriptive booklet F-541 sent on request.

Fig. 1021 "Ferrenewo"
and
Fig. 73 "Renewo"
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Quality products in every respect, these original Lunkenheimer designs effect extensive reductions in maintenance expense. Seats and discs are renewable and regrindable, and all parts of the two valves excepting bonnet rings are interchangeable. A single stock of repair parts is sufficient for both patterns, the 150 lb. W. S. P. "Ferrenewo" and the 200 lb. W. S. P. "Renewo".

Correct design and care in manufacture, together with rigid test and inspection, assure valves of unvarying quality.

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Here's speed! Wrapping a mile and a quarter of 12" line per day. Not only a faster job but a *better* job with J-M rotary-type Field Wrapping Machine.

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Wrapping with J-M Saddle-type Machine—note smooth application of the felt.

BY incorporating a wrapping of J-M Asbestos Pipe Line Felts in their pipe protection, owners of more than 10,000 miles of pipe lines have obtained security against corrosion.

Years of extra service have been added by this tested protection.

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J-M Asbestos Felt provides the line with an armor of lasting protection that costs but a fraction of the cost of reconditioning.

J-M Asbestos Pipe Line Felts can be applied bonded or unbonded—by hand or by machine—in the mill, in the yard or in the field.

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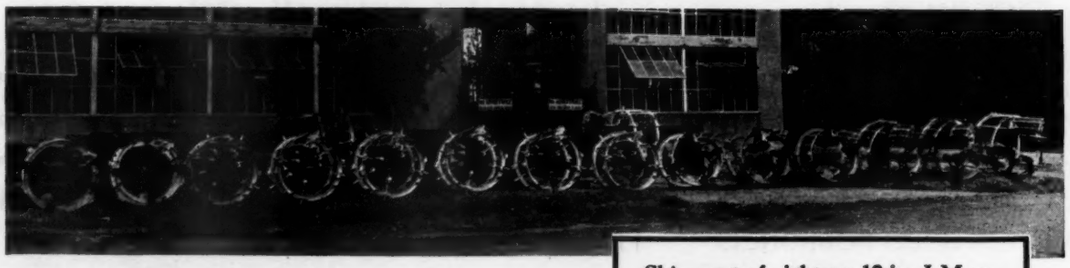

Shipment of eighteen 12-in. J-M rotary-type wrapping machines to be used on Texas Company's line from East Texas to Port Arthur.

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For security against moisture penetration . . . soil stress . . . and electro-chemical action.

JM

Pipe Line Felts

A Texas installation of 14-in. Naylor *SPIRALWELD* Pipe, 40-foot lengths.

The Naylor *SPIRALWELD* Truss Takes The Strain

TRADE MARK
NAYLORPIPE
PIPE CARRIED IN STOCK AT CHICAGO, HOUSTON AND LOS ANGELES

6 Naylor *SPIRALWELD* Pipe advantages for Air, Water, Oil and Gas service:

STRENGTH — LIGHT WEIGHT
WELD STAMINA — FLEXIBILITY
LONG LIFE — PERFECT ROUNDNESS

THE Naylor spiral lock-seam truss structure, which is formed before the weld is applied, holds the pipe in formation. And, having an inherent flexibility, the exclusive Naylor structure takes the load and absorbs expansion and contraction strains all along the line.

The Naylor WELD is distinctive in character, unlike any other pipe weld because it is required to serve one primary function . . . *seal the pipe leak tight!*

Since the Naylor WELD is relieved of the fatigue to which a weld is subjected in other pipe structures, it is free and more sure of retaining its original soundness. The result is greater weld stamina which assures the positive leak tightness of Naylor SPIRALWELD Pipe in any service.

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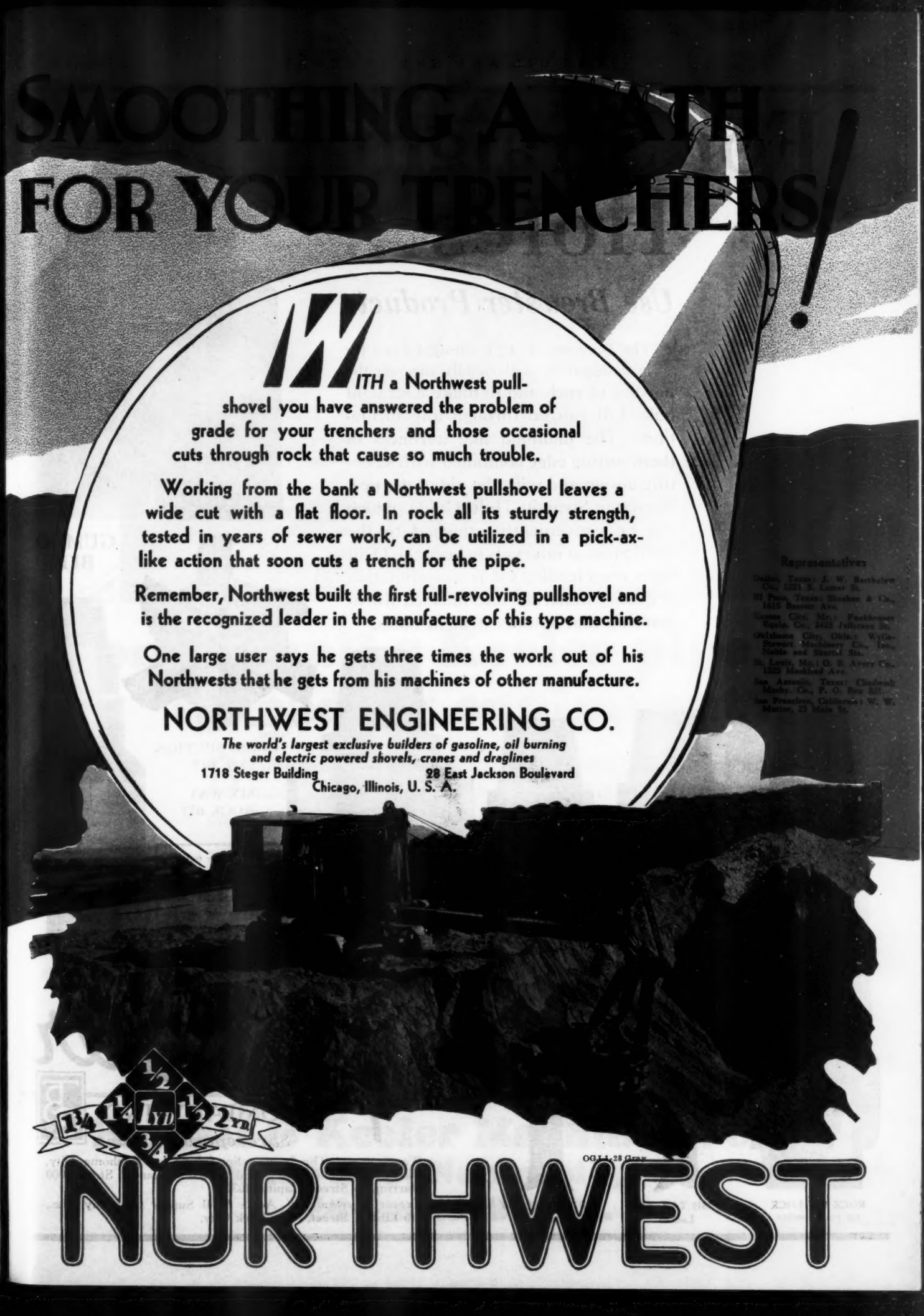
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Working from the bank a Northwest pullshovel leaves a wide cut with a flat floor. In rock all its sturdy strength, tested in years of sewer work, can be utilized in a pick-ax-like action that soon cuts a trench for the pipe.
Remember, Northwest built the first full-revolving pullshovel and is the recognized leader in the manufacture of this type machine.
One large user says he gets three times the work out of his Northwests that he gets from his machines of other manufacture.
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Use Brewster Products

GUMBO BIT

★ The Brewster A. P. I. Straight Hole Bit is designed to drill rapidly through the hardest of rock and to make a straight hole, full gauged through any formation. The diamond like hardness of their cutting edge combined with scientific design and with the aid of the new Brewster Straight Hole Guide, which can be conveniently attached to the Drill Stem at intervals to keep the Drill Stem from leading off, is a combination of quality materials and finished workmanship that assures straight holes.

Pat. Pending 438542

CROSS SECTION OF BIT

—SIX-WAY ROCK BIT

The Brewster Straight Hole Guide made in any size and of Chrome Nickel Steel, faced on the smooth surface with Tungsten Carbide metal.

The best insurance you can have against a fishing job is the Brewster Safety Lock Drill Collar, which gives a positive lock for any style bit.

ROCK BIT LOCK
Pat. Pending 487553

FISH TAIL BIT
Locked

FISH TAIL BIT
Unlocked

The Brewster COMPANY~INC.

Shreveport,Louisiana

Warehouses: The Iverson Specialty Co., Oklahoma City, Oklahoma, Phone 2-2833; The Brewster Houston Store, 2000 Harrington Street, Capitol 2031.

Export Distributors: Acme Well Supply Company, Inc., 136 Liberty Street, New York City.

Why not standardize

on Bignall & Keeler pipe threading equipment?

BIGNALL & KEELER Pipe Threading Machines are more often than ever the choice of oil companies and supply men who are standardizing their threading equipment and working for best quality and lowest cost. B & K machines have 50 years of proven performance behind them. They are unequalled in speed, dependability, and ease of operation. Many 20 and 30-year-old B & K machines are still doing perfect work. You can confidently expect any B & K machine to pay for itself in better work and lower costs.

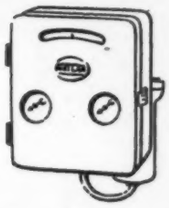
PEERLESS B&K DUPLEX P.D.Q.C

Let us send you our catalog. Your investigation is welcomed.

Bignall & Keeler Machine Works
of the N. O. Nelson Mfg. Co.
Edwardsville, Ill.

OGJ 1-28 Gray

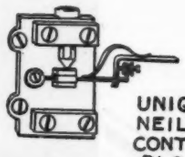
Neilan again!



It remained for Neilan to make a non-recording flow controller. For years many engineers have sought for the economy and convenience of a simple, accurate flow control instrument. Perhaps you are one of them.

NEILAN PRESSURE BALANCED COMPOUND PILOT VALVE

There is a wide application for this NEW Neilan Flow Controller for every service where flow must be precisely controlled and yet chart records are not required. This is especially true now when efficiency must be maintained or increased with a minimum expenditure for equipment.

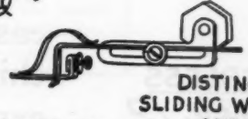


UNIQUE NEILAN CONTROL BLOCK

You can readily appreciate how perfectly such a device may be used for supplying a constant volume of raw gasoline feed or reflux to stabilizers. There are numerous other uses both in the oil and gas industries of equal importance.

SETTING EASILY MADE FROM OUTSIDE OF CASE

Like other Neilan instruments, this Neilan Flow Controller incorporates many advanced features. Your nearest Neilan Engineer will be pleased to tell you about them or you may write us direct. Either way, it will pay you to investigate the NEW Neilan Flow Controller before you install flow control equipment.



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RESEARCH

To assist the refiner still further to meet today's demand for high quality products at low cost, The M. W. Kellogg Company is constantly expanding its program of research. ¶ The use of a laboratory cracking coil for determining the optimum conditions to produce high yields and anti-knock ratings is proving particularly valuable. ¶ Also, an extension is being added to the present research building. This will house another coil for cracking experiments that will contribute both flexibility in operating conditions and aid in obtaining accurate design information.

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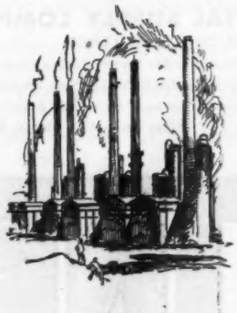
Kellogg products include Cross, Holmes-Manley, and de Florez cracking units; de Florez furnaces and temperature control apparatus; pipe stills; Pacific Centrifugal pumps; absorption, stabilization and treating plants; Masterweld pressure vessels; complete refinery and power plant piping.



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Every oil man knows that unless wire lines are built for the most strenuous service they will never "stand the gaff" in the oil industry.
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Oil men know, too, that if Jarecki carries a product in all of its stores, that product may be absolutely depended upon in service.
That is why experienced oil men select Union Wire Rope for the toughest jobs they have.
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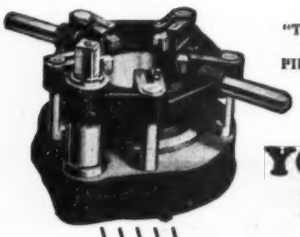
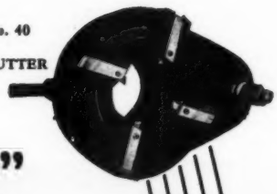


"TOLEDO" No. 2
2½" to 4"
PIPE THREADER



"TOLEDO" No. 40
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YOU CAN BANK ON "TOLEDOS" FOR GOOD SERVICE IN 1932—

—at minimum cost.

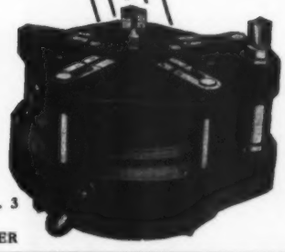
If you are interested in keeping your piping costs at a minimum in 1932, you will be interested in Genuine "TOLEDO" Pipe Tools and Pipe Machines.

Never before have "TOLEDO" Tools shown such superiority in reducing piping installation costs.

It is wise to choose "TOLEDOS" for in "TOLEDOS" you derive the benefit from 30 years experience in Pipe Tool manufacture. This experience is passed on to you in quality built pipe tools.

"TOLEDOS" offer a complete line of Pipe Tools and Pipe Machines from ⅛ to 12 inches.

Specify "TOLEDOS" and you will notice the saving. A postcard brings complete information.



"TOLEDO" No. 3
4½" to 8"
PIPE THREADER

THE TOLEDO PIPE THREADING MACHINE CO. TOLEDO, OHIO
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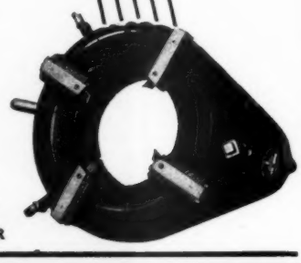
"TOLEDO"



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B-M-W PRODUCTS for pumping wells
The KEY to LOWER LIFTING COSTS
CORRECTLY DESIGNED .. ECONOMICALLY PRODUCED
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B-M-W NEILSON Universal Sucker Rod Socket

Reversible Type

Hangs on like a Bulldog!

The Reversible Slips are tapered each way from center and have one end made for rod-breaks and the other for boxes. Twisting and Spudding are unnecessary with the UNIVERSAL—simply lower Socket onto break and it engages—and hangs on like a bulldog.

Slips are made of quality steel—heat treated to insure long life. The Control Ring which embraces Slips absolutely prevents loss of Slips from bowl which is made of high carbon seamless steel. Furnished to fit any size pin. Ask your supply store—GIVE THE UNIVERSAL SUCKER ROD SOCKET A FAIR TRIAL—it can't be beaten!

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The Pickering Governor Co.
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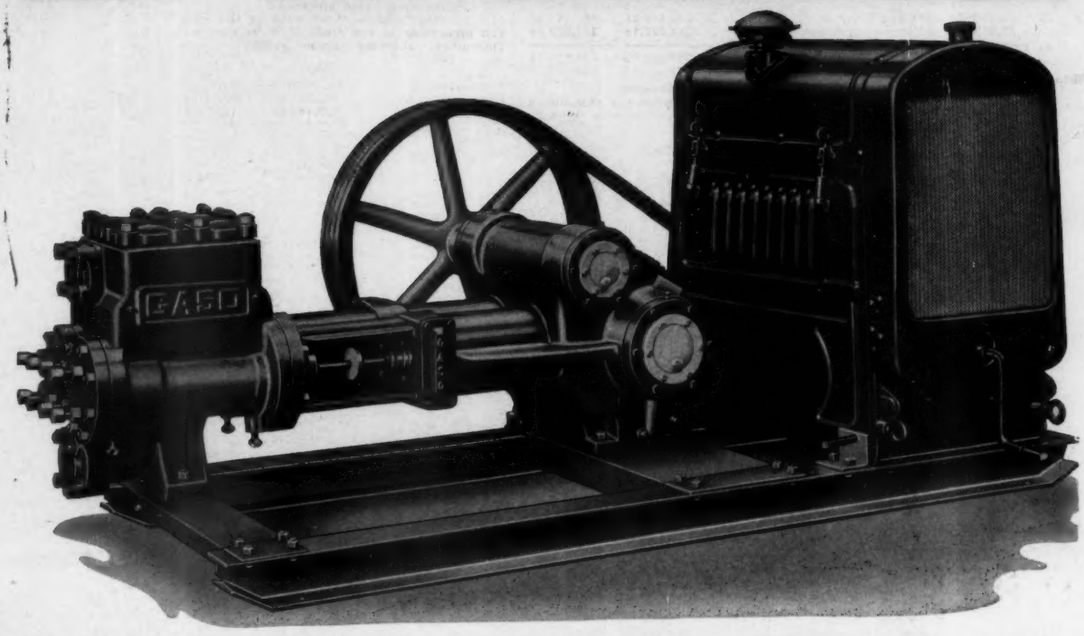
PICKERING GOVERNORS

A SMALL HIGH PRESSURE UNIT BY GASO



3", 3½" and 4" x 6" GASO DUPLEX PISTON ENCLOSED DOUBLE-ACTING POWER PUMP

Capacity from 70 barrels at 750 pounds to 126 barrels per hour at 450 pounds.

Fully enclosed power frame, with sufficient length to prevent over lapping of piston rods. All Timken bearing, both main and pinion shafts being journaled in Timken Tapered Roller Bearings. Open hearth steel pinion shaft and crank shaft, all bearing surfaces being turned and ground. Connecting rods cast steel with removable steel shell bearing, babbitt lined, on crank end and bronze bushed on crosshead end. Wide faced semi-steel gear and forged steel pinion gear mounted in center. All parts lubricated by an oil bath.

Fluid end: equipped with inter-changable liners from 3" to 4", Monel metal valves, bronze seats, cast iron pistons, steel piston rods, cast iron snap piston rings.

Pump only, or equipped as illustrated with combination gas and gasoline engine, driven with "V" belt drive, all mounted on steel skids.

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